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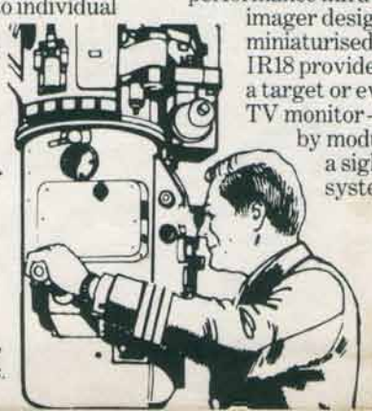

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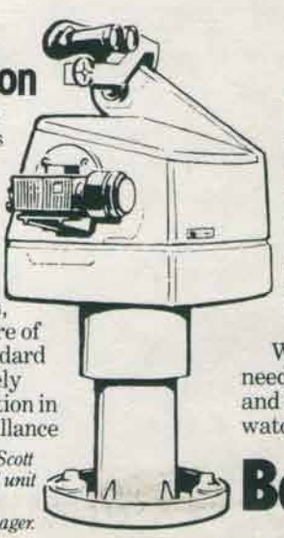

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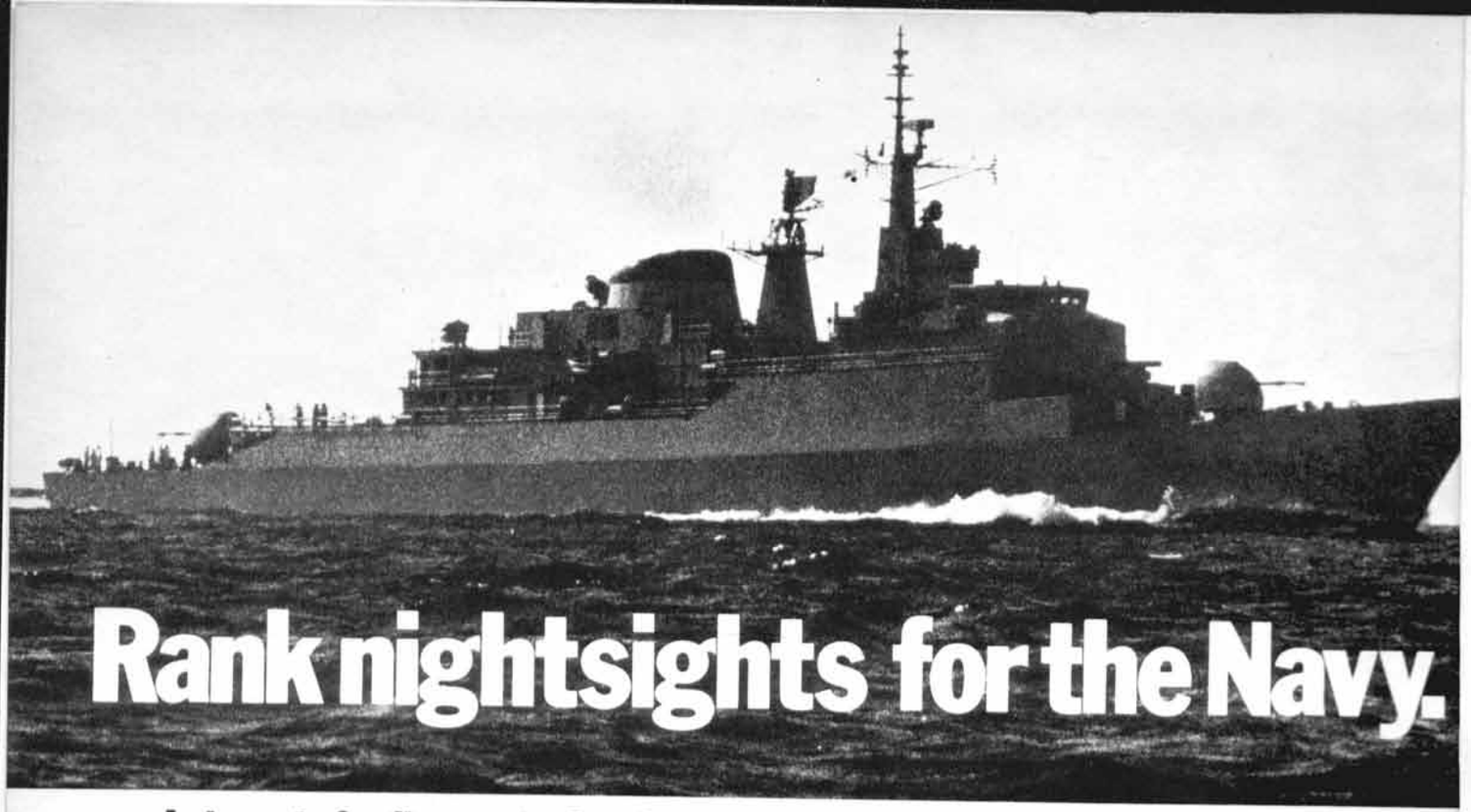

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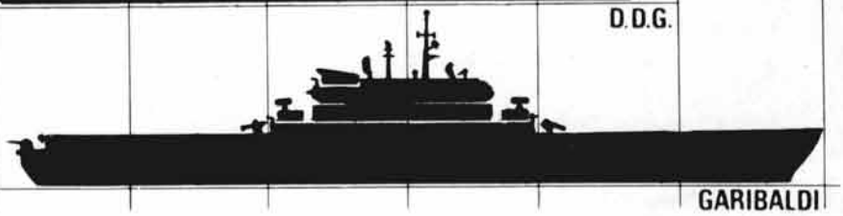
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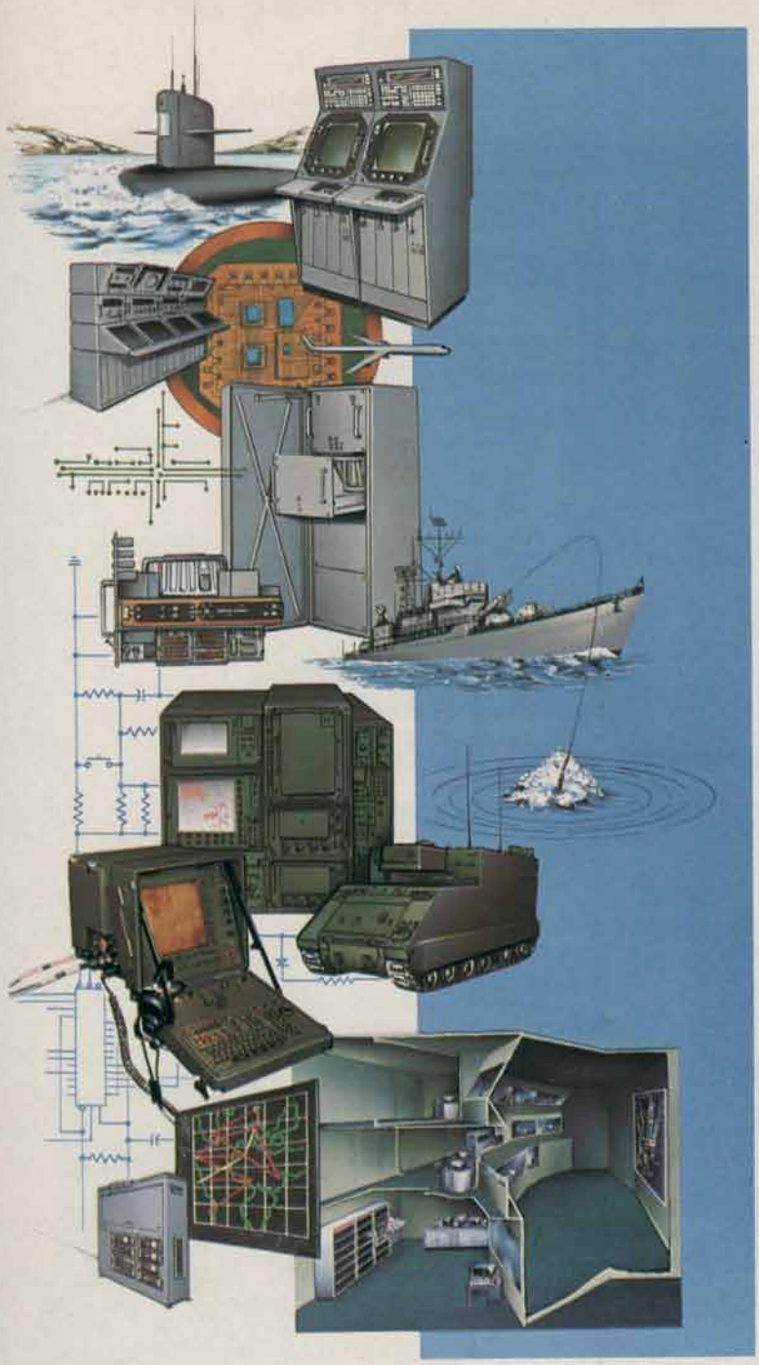

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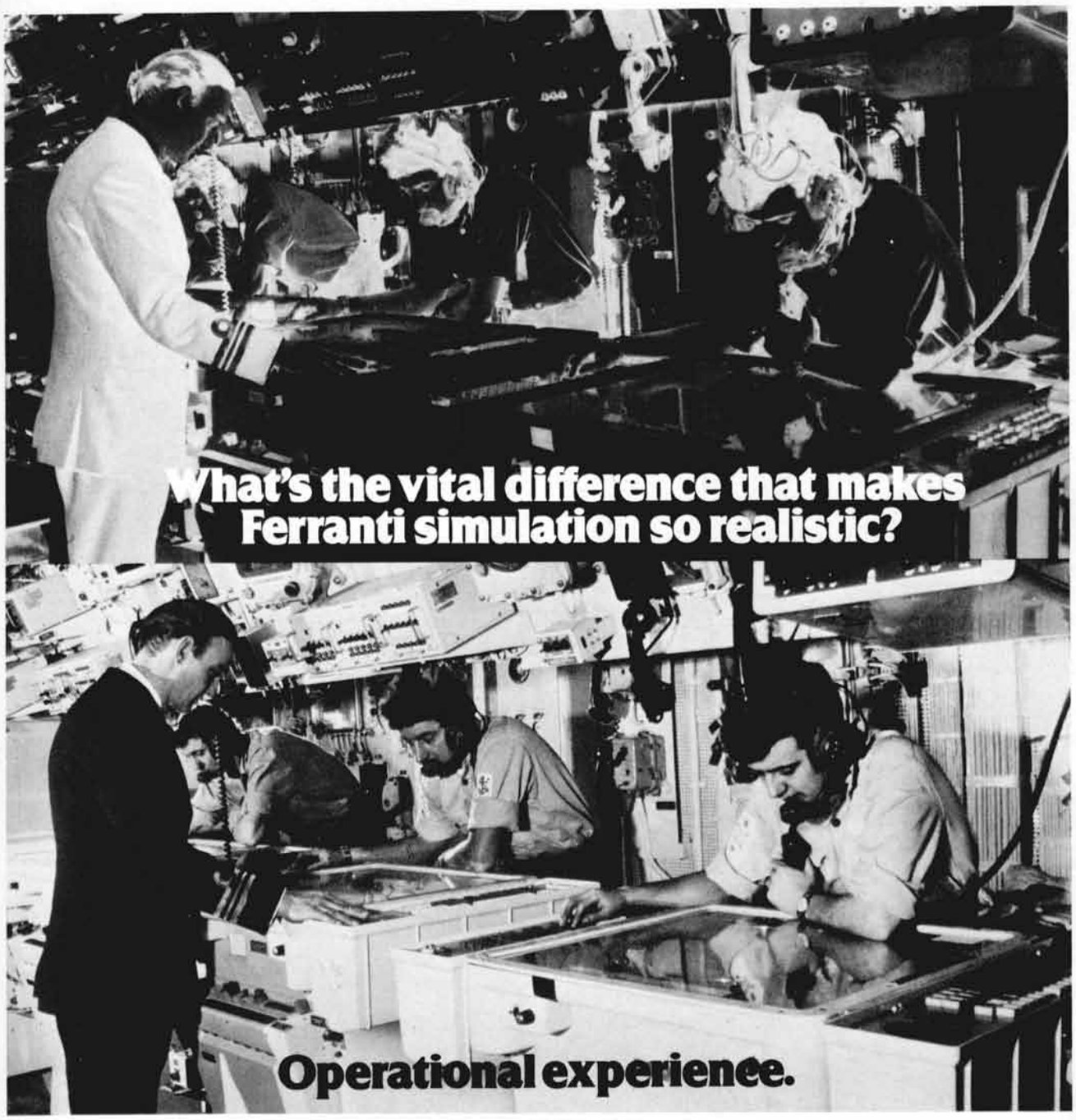

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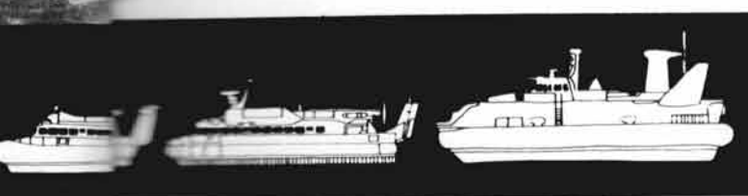

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Gears, reverse-reduction
CRM
Empresa Nacional Bazan
Franco Tosi
Isotta Fraschini
Korody-Colyer
MTU
Rhine-Schelde-Verolme
Zahnradfabrik

Blohm+Voss

100 Years Blohm+Voss

1892	Small Cruiser "Condor"
to	3 Cruisers
1918	9 Heavy Cruisers and Battle Ships a. o. "Goeben", "Seydlitz", "Derfflinger"
	6 Torpedo Boats
	100 Submarines
1918	3 Training Sail Ships and 1 Aviso
to	6 Frigates and Destroyers
1945	1 Heavy Cruiser "Admiral Hipper"
	1 Battleship "Bismarck"
	230 Submarines

85 Years Naval Construction

1958	1 Training Sail Ship
to	4 Destroyers of the "Hamburg Class"
1971	6 Frigates of the "Köln Class"
	3 Escorts
	3 Supply Ships and 2 Mine Carriers
	2 Landing Craft
	3 Corvettes
1972 to 1977	Modernisation of the "Hamburg Class" destroyers
1977	1 Frigate (Prime Contractor for G. P. MEKO 360)
1978	2 Repeats Frigate F 122 for BV/German Federal Navy
1979	4 Frigates (Prime Contractor for MEKO 360)
	6 Corvettes MEKO 140 (Design and material supply)

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Gears, spiral bevel
Rhine-Schelde-Verolme

Gears, spur
Rhine-Schelde-Verolme

Gears, vee drive
CRM
Vosper Thornycroft
Isotta Fraschini

Gears and gearing (marine & aircraft)
Fiat

Gears and gearing
Cantieri Navali Riuniti
Fincantieri
Rhine-Schelde-Verolme
Vickers

Generators, diesel
AIFO

Generators, electric
DTCN
Empresa Nacional Bazan
Hatch & Kirk
Selin
Thomson CSF

Glass reinforced plastic construction
Intermarine

Governors
DTCN
Fincantieri
Hatch & Kirk
SEPA

Governors, engine speed
Cantieri Navali Riuniti
DTCN
Hatch & Kirk
Korody-Colyer

Ground influence mines
Bofors

Guided missile launcher systems
Vickers

Guided missile servicing equipment
Aérospatiale
Fincantieri
MATRA
Rhine-Schelde-Verolme

Guided missile ships
Aérospatiale
Blohm & Voss
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Halter Marine
Lürssen Werft
Matra
Nevesbu
Rhine-Schelde-Verolme
Singapore Shipbuilding & Engineering
Vosper International
Vosper Singapore
Wärtsilä
Werft Nobiskrug
Yarrow (Shipbuilders)

Guided missiles
Aérospatiale
Bofors
DTCN
ELSAG
Matra
OTO Melara
Raytheon
Sistel-Sistemi
SMA
Sperry Gyroscope

Gun boats
Brooke Marine
Cantieri Navali Riuniti
Crestitalia
De Vries Shipyards
DTCN
Empresa Nacional Bazan

Gun boats
Fincantieri
Lürssen Werft
Nevesbu
SFCN
Singapore Shipbuilding & Engineering
Vosper International
Vosper Singapore
Vosper Thornycroft
Wärtsilä

Gun mounts
Creusot-Loire
DTCN
Empresa Nacional Bazan
FMC
Oerlikon-Bührle
OTO Melara

Gun-sighting apparatus and height finders
DTCN
Lockheed Electronics
Oerlikon-Bürhle
Officine Galileo
Philips Elektronikindustrier
Rank Pullin Controls
Thomson CSF

Guns and mountings
Bofors
Breda Meccanica
DTCN
Empresa Nacional Bazan
FMC
Oerlikon-Bührle

Gyroscopic compasses
DTCN
Sperry Gyroscope

Gyroscopic compasses, aircraft
Bofors
Sperry Gyroscope

Gyroscopic compasses, land vehicles
Sperry Gyroscope

Gyroscopic compasses, ships
Sperry Gyroscope
Trieste Club

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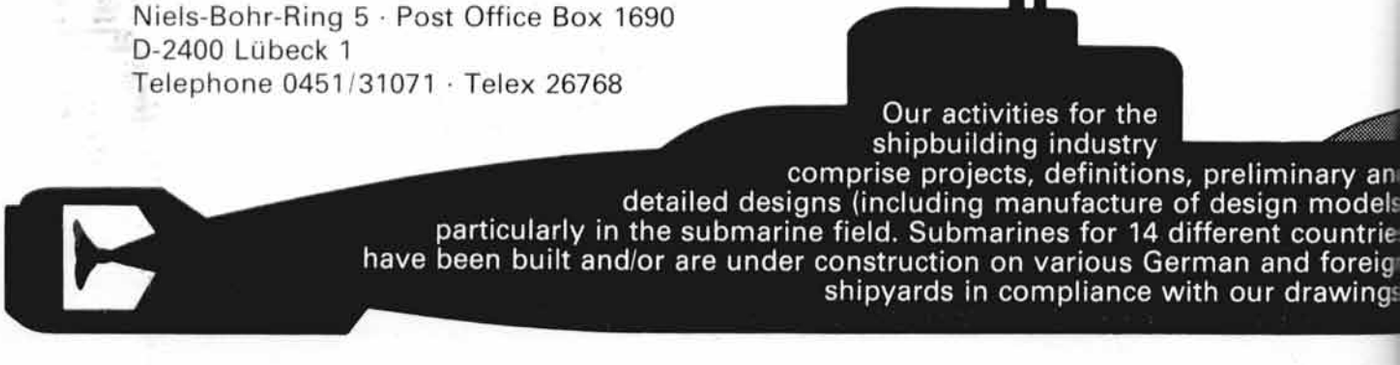
Our activities for the
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comprise projects, definitions, preliminary an
detailed designs (including manufacture of design models
particularly in the submarine field. Submarines for 14 different countrie
have been built and/or are under construction on various German and foreig
shipyards in compliance with our drawings

Harbour vessel traffic systems
Lockheed Electronics
Racal-Decca Marine Radar
Racal-Decca Survey
SMA

Headphones
DTCN

Heat exchangers
Blohm & Voss
Cantieri Navali Riuniti
Empresa Nacional Bazan
Franco Tosi
Hatch & Kirk
Korody-Colyer

Heated windows
Barr & Stroud
Kollmorgen

Heavy duty mooring motorboats
DTCN

Helicopter, anti-submarine patrol
Aérospatiale
Agusta
Sintra/Alcatel

Helicopter, maritime reconnaissance
Agusta

Helicopters—shipborne (startup equipment)
Cutler-Hammer Italiana

High level liquid alarm systems
Officine Panerai

Homogeniser, fuel oil
Vickers

Hovercraft
British Hovercraft Corporation
British Shipbuilders
DTCN
Vosper Thornycroft
Wärtsilä

Hydraulic equipment
DTCN

Hydraulic equipment
Fincantieri
MacTaggart Scott
Officine Galileo
Riva Calzoni
Thyssen

Hydraulic machinery
DTCN
Fincantieri
MacTaggart Scott
Riva Calzoni
Thyssen
Trieste Club

Hydraulic plant
Cantieri Navali Riuniti
DTCN
Fincantieri
MacTaggart Scott
Riva Calzoni

Hydrofoils
Blohm & Voss
British Shipbuilders
Cantieri Navali Riuniti
DTCN
EDO Corporation
Fincantieri
Rodriques Cantiere Navale
Singapore Shipbuilding & Engineering
Vosper International
Vosper Singapore

Hydrographic survey equipment
Ameeco
DTCN
EDO Corporation
Racal-Decca Survey

Hydrophones
Ameeco
EDO Corporation
Graseby
Sintra/Alcatel
Thomson CSF
USEA

Icebreakers
Bremer Vulkan

IFF Mk 10 systems
DTCN
Thomson CSF

IFF radar
DTCN
Lockheed Electronics
Philips Elektronikindustrier
SMA
Thomson CSF
Trieste Club

Indicators, electric
DTCN

Inertial gyro calibration equipment
Graseby

Inertial navigation systems (strap-down technology)
Bofors

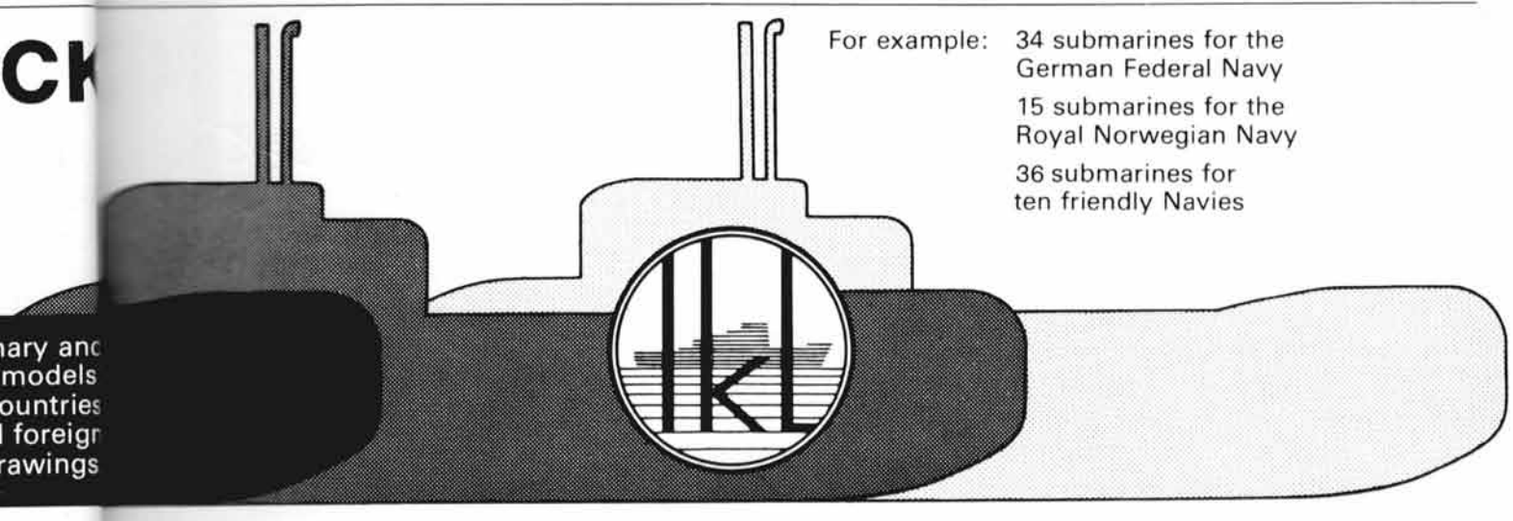
Inertial navigation systems
DTCN
Racal-Decca Navigator
Sperry Gyroscope

Inflatable boats
Zodiac

Infra-red countermeasure systems
CSEE
Elettronica
Hycor

Infra-red materials
Barr & Stroud
DTCN
Rank Pullin Controls
Thomson CSF

Infra-red systems
Barr & Stroud
CSEE
DTCN
Hollandse Signaalapparaten
Hycor
Officine Galileo
Philips Elektronikindustrier


For example: 34 submarines for the German Federal Navy
15 submarines for the Royal Norwegian Navy
36 submarines for ten friendly Navies
IKL

Infra-red systems
Selenia
Thomson CSF

Injectors—Fuel
Hatch & Kirk
Korody-Colyer

Instrument calibration services
Vickers
Vitroselenia

Instrument panels
EDO Corporation
Lürssen Werft
Vosper Thornycroft
Wärtsilä

Instruments, electronic
Racal-Decca Marine Radar
Racal-Decca Navigator
SEPA
Thomson CSF

Instruments, nautical
DTCN
Sperry Gyroscope
Trieste Club

Instruments, precision
Barr & Stroud
DTCN
IAI

Instruments, test equipment
DTCN
SEPA
Vitroselenia

Intercommunications systems
Hollandse Signaalapparaten
McMichael
Rediffusion

Interior design and furnishing for ships
Blohm & Voss
Bremer Vulkan
DTCN
Lürssen Werft
Vickers
Vosper Shiprepairers
Wärtsilä

Inverters and battery chargers
Officine Panerai
Selin

Jeebreakers
Wärtsilä

Landing craft
British Shipbuilders
Bremer Vulkan
Brooke Marine
Cantieri Navali Riuniti
CNIM
DTCN
Empresa Nacional Bazan
Lürssen Werft
Rhine-Schelde-Verolme
SFCN
Singapore Shipbuilding & Engineering
Yarrow (Shipbuilders)

Landing craft: logistic
British Hovercraft Corporation
British Shipbuilders
Brooke Marine
CNIM
Empresa Nacional Bazan
NEVESBU
SFCN
Singapore Shipbuilding & Engineering
Vosper International
Vosper Singapore
Yarrow (Shipbuilders)

Laser rangefinders
Barr & Stroud
DTCN
FIAR
Hollandse Signaalapparaten
Selenia
Thomson CSF

Laser systems
Barr & Stroud
CSEE
DTCN
Hollandse Signaalapparaten
Officine Galileo
OTO Melara
Raytheon
Singer Librascope
Sperry Gyroscope
Thomson CSF

Launches: patrol
Brooke Marine
De Vries Shipyards
Empresa Nacional Bazan
Krögerwerft
Singapore Shipbuilding & Engineering
Thomson CSF
Vosper International
Vosper Singapore
Zodiac

Lifeboats
Crestitalia
De Vries Shipyards
DTCN
Zodiac

Lifts, hydraulic
MacTaggart Scott

Liquid petroleum gas carriers
Bremer Vulkan
CNIM
DTCN
Fincantieri
Singapore Shipbuilding & Engineering
Thyssen
Wärtsilä

Loudspeaker equipment
Ameeco
Thomson CSF

Low magnetic signature engines for MCMV's
Paxman Diesels

Machined parts, ferrous
Blohm & Voss
DTCN
EDO Corporation
Hycor
Vickers
Wärtsilä

Machined parts, non-ferrous
Blohm & Voss
DTCN
EDO Corporation
Hycor
Vickers
Wärtsilä

Maintenance and repair ships
Bremer Vulkan
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Rodriques Cantiere Navale
Vosper Singapore
Wärtsilä
Werft Nobiskrug

Marine architects
DTCN
Empresa Nacional Bazan
Fincantieri
Ingenieurkontor Lübeck
Lürssen Werft
Nevesbu
Rhine-Schelde-Verolme
Vickers
Wärtsilä

Marine consultants
Empresa Nacional Bazan
Ingenieurkontor Lübeck
Lürssen Werft
Vickers
Vosper International
Wärtsilä

Marine engine monitoring and data recording systems
British Hovercraft Corporation
DTCN
SEPA

Marine engineering
Vosper International

Marine radar
DTCN
Graseby
Oerlikon-Bührle
Philips Elektronikindustrier
Racal-Decca Marine Radar
Raytheon
SMA
Socorama/GEM
Thomson CSF
Trieste Club

Materials handling equipment
British Hovercraft Corporation
DTCN
MacTaggart Scott

Market intelligence reports
DMS

Memory storage systems for military vehicles
Sperry Gyroscope

Merchant ships
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Cantieri Navali Riuniti
CNIM
Empresa Nacional Bazan
Fincantieri
Halter Marine
Lürssen Werft
Rhine-Schelde-Verolme
Singapore Shipbuilding & Engineering
Thyssen
Wärtsilä
Werft Nobiskrug

Message processing systems
Singer Librascope
Sperry Gyroscope
Thomson CSF

Microphone equipment
DTCN
Thomson CSF
Trieste Club

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Kollmorgen
Lockheed Electronics
SMA
Thomson CSF

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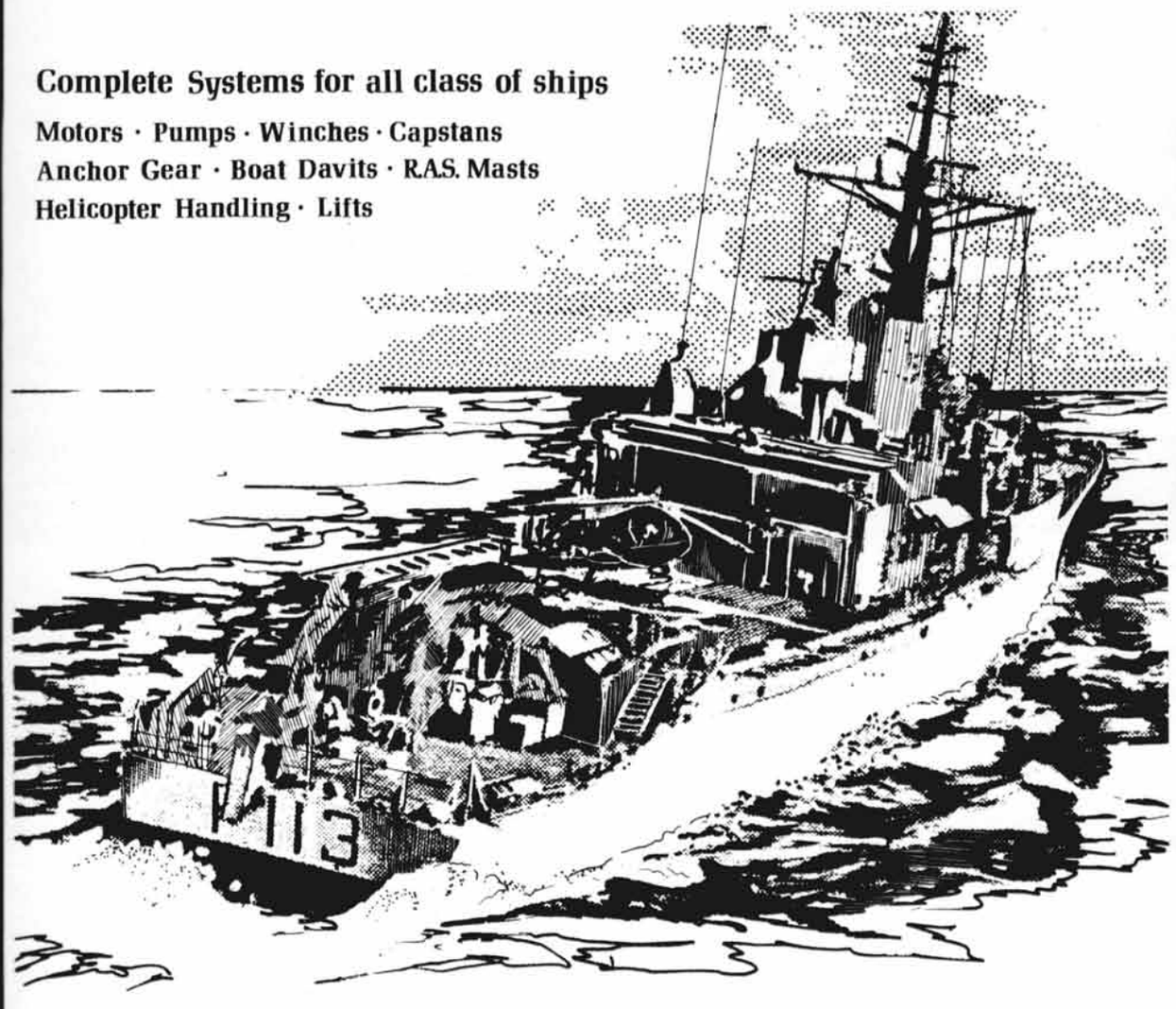

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Misar

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British Shipbuilders
Brooke Marine
Krögerwerft
Lürssen Werft
Thomson CSF
Vosper International
Vosper Singapore
Vosper Thornycroft
Yarrow (Shipbuilders)

Mine countermeasures
DTCN
EDO Corporation
Ferranti
Philips Elektronikindustrier
Racal-Decca Survey
Sippican, Ocean Equipment
Sperry Gyroscope
Thomson CSF

Mine hunters
Vosper Thornycroft

Mine hunting equipment
EDO Corporation
Racal-Decca Survey
Riva Calzoni
Sippican, Ocean Equipment
SMA
Sperry Gyroscope
Thomson CSF

Minelayers
Blohm & Voss
British Hovercraft Corporation
British Shipbuilders
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Krögerwerft
RSV
SFCN
Werft Nobiskrug
Wärtsilä

Minesweeping equipment
EDO Corporation
SMA
Sperry Gyroscope
Thomson CSF

Minesweepers
Blohm & Voss
British Hovercraft Corporation
British Shipbuilders
Cantieri Navali Riuniti
DTCN
EDO Corporation
Empresa Nacional Bazan
Fincantieri
Halter Marine
Korody-Colyer
Krögerwerft
Lürssen Werft
Rhine-Schelde-Verolme
Vosper Singapore
Vosper Thornycroft
Wärtsilä
Werft Nobiskrug

Minewarfare technology
Intermarine

Missile control systems
Aérospatiale
CSEE
DTCN
ELSAG
Ferranti

Missile control systems
Hycor
Lockheed Electronics
Oerlikon-Bührle
Matra
Marconi Italiana
Officine Galileo
Philips Elektronikindustrier
Raytheon
Sistel-Sistemi
SMA
Sperry Gyroscope
Thomson CSF

Missile installations
Aérospatiale
DTCN
Hycor
Matra
Raytheon
Singapore Shipbuilding & Engineering
Sistel-Sistemi
SMA
Thomson CSF
Vitroselenia
Vosper Shiprepairers

Missile launching systems
Aérospatiale
Creusot-Loire
CSEE
DTCN
EDO Corporation
FMC
Hycor
Matra
OTO Melara
Raytheon
Singer Librascope
Sistel-Sistemi
Thomson CSF
Vickers

Missile mid-course guidance systems
Marconi Italiana

Missile ships
Aérospatiale
Blohm & Voss
British Shipbuilders
Brooke Marine
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Israel Shipyards
Matra
NEVESBU
Rhine-Schelde-Verolme
Rodriques Cantiere Navale
SFCN
Singapore Shipbuilding & Engineering
Vosper International
Vosper Singapore
Wärtsilä
Werft Nobiskrug
Yarrow (Shipbuilders)

Model experiment tanks
Vickers

Model makers and designers
British Hovercraft Corporation
Fincantieri
Ingenieurkontor Lübeck
NEVESBU

Model test towing tank service
British Hovercraft Corporation
Wärtsilä

Motor control gear
British Hovercraft Corporation

Motor starters
Korody-Colyer
Selin

Motor torpedo boats
British Shipbuilders
Brooke Marine
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Lürssen Werft
NEVESBU
Rhine-Schelde-Verolme
Singapore Shipbuilding & Engineering
Trieste Club
Vosper International
Vosper Singapore
Wärtsilä

Motors, electric
Selin
Thomson CSF

Naval base design
Vosper International

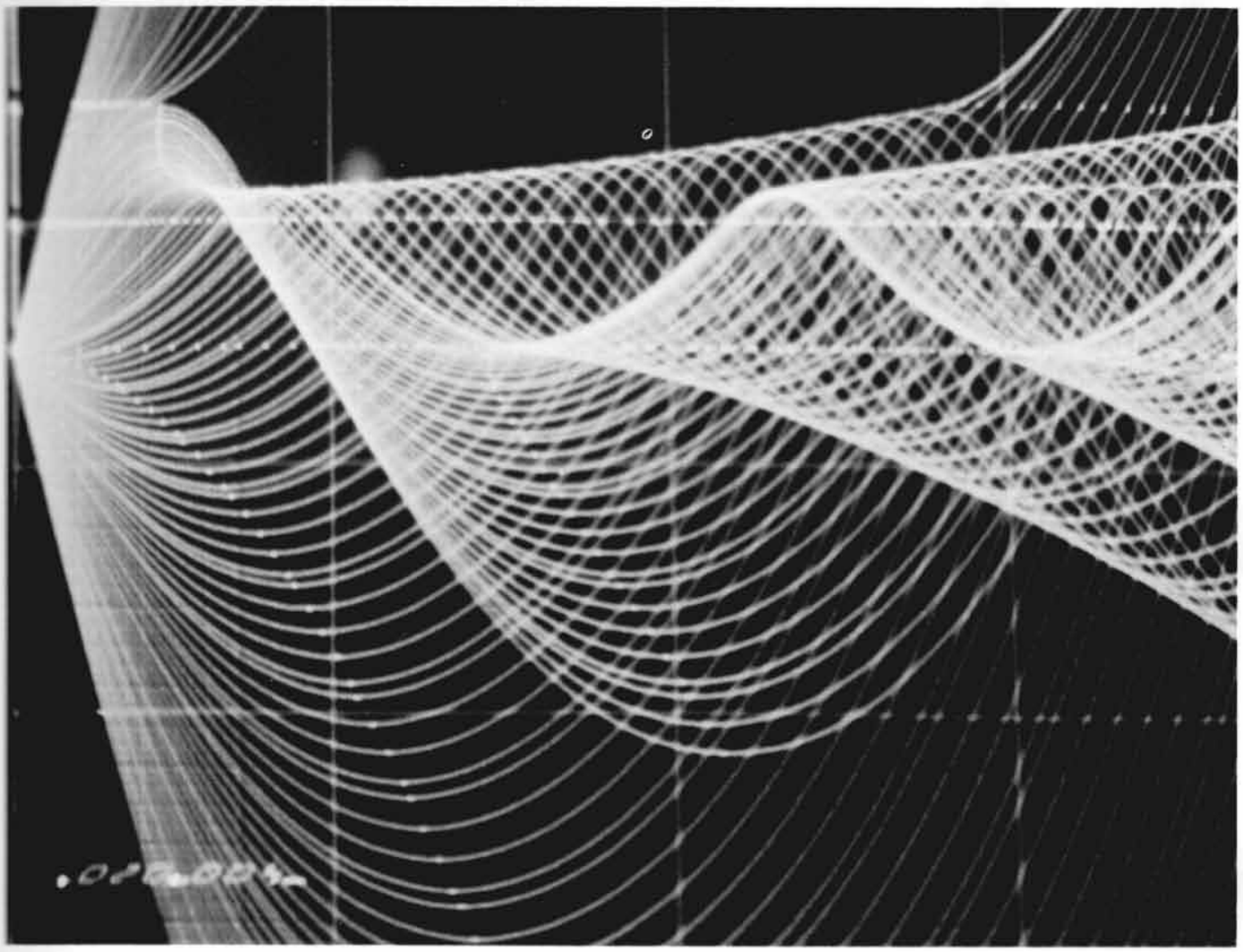
Naval guns
Bofors
Breda Meccanica
British Shipbuilders
Creusot-Loire
DTCN
Empresa Nacional Bazan
FMC
Oerlikon-Bührle
OTO Melara
Vickers

Naval radar
DTCN
ELSAG
Hollandse Signaalapparaten
Kollmorgen
Lockheed Electronics
Oerlikon-Bührle
Philips Elektronikindustrier
Racal-Decca Marine Radar
Raytheon
SMA
Thomson CSF
Trieste Club

Navigation aids
Bofors
CSEE
DTCN
Elmer
Racal-Decca Marine Radar
Racal-Decca Navigator
Rank Pullin Controls
Rediffusion
SMA
Sperry Gyroscope
Thomson CSF

Night vision systems
Barr & Stroud
Bofors
DTCN
ELSAG
Kollmorgen
Officine Galileo
Rank Pullin Controls
Selenia
Thomson CSF

Non-magnetic minesweepers
DTCN
EDO Corporation
Empresa Nacional Bazan
Fincantieri
Korody-Colyer
Krögerwerft
Lürssen Werft
Rhine-Schelde-Verolme
Singapore Shipbuilding & Engineering



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- Submarine passive/active interception sonars
- Airborne ASW detection systems (and acoustic buoys)
- ASW (and mine warfare) operation room simulators.

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- Mines
- Ship degaussing
- Monitoring stations for measuring magnetic field (ships and their equipments)
- Navigation DOPPLER sonars.

Oceanography and off-shore oil exploitation

- Navigation - positionning systems
- Detection and imaging devices - TV equipments
- Acoustic transmission systems
- Acoustic measurements devices
- Diver equipments.

THOMSON-CSF

DIVISION ACTIVITÉS SOUS-MARINES - B.P. 53 - 06802 CAGNES-SUR-MER - TÉL. (93) 20.01.40

4237

Oceanographic electronic systems
Ameeco
DTCN
Howaldstwerke-Deutsche Werft
Racal-Decca Survey
SEPA
Sippican, Ocean Systems
Thomson CSF

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Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Halter Marine
Krögerwerft
NEVESBU
Rhine-Schelde-Verolme
SFCN
Werft Nobiskrug
Yarrow (Shipbuilders)

Offshore countermeasures
British Shipbuilders
British Hovercraft Corporation
DTCN
Hycor
Krögerwerft

Oil drilling rigs
CNIM
Fincantieri
Howaldtswerke-Deutsche Werft
Italcantieri

Oil fuel heaters
Blohm & Voss
Fincantieri

Oil fuel systems and burners
Franco Tosi
Vosper Thornycroft

Oil rig supply vessels and work boats
Bremer Vulkan
British Shipbuilders
Brooke Marine
Crestitalia
Fincantieri
Halter Marine
Singapore Shipbuilding & Engineering
Wärtsilä
Werft Nobiskrug
Zodiac

Optical equipment
Barr & Stroud
Bofors
CSEE
DTCN
ELSAG
Kollmorgen
Officine Galileo
Rank Pullin Controls

Optical filters
Barr & Stroud
DTCN
Officine Galileo

Optronics
Barr & Stroud
CSEE
Elettronica
ELSAG
Hollandse Signaalapparaten
Kollmorgen
Lockheed Electronics
McMichael
Officine Galileo
Thomson CSF

Ordnance
Bofors
Breda Meccanica
Difesa e Spazio
Empresa Nacional Bazan
Fratelli Borletti
Hycor
Oerlikon-Bührle
Snia Viscosa

Oropesa sweeps
Sperry Gyroscope

Parts for diesel engines
Blohm & Voss
Bremer Vulkan
Cantieri Navali Riuniti
CRM
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi
Hatch & Kirk
Korody-Colyer
Rhine-Schelde-Verolme
Wärtsilä

Parts for gas turbine engines (marine & aircraft)
Fiat

Passenger ships
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Cantieri Navali Riuniti
CNIM
Crestitalia
DTCN
Empresa Nacional Bazan
Fincantieri
Rhine-Schelde-Verolme
Rodriques Cantiere Navale
SFCN
Singapore Shipbuilding & Engineering
Thyssen
Wärtsilä
Werft Nobiskrug

Patrol boats
Bremer Vulkan
British Shipbuilders
Brooke Marine
Cantieri Navali Riuniti
De Vries Shipyards
Empresa Nacional Bazan
Krögerwerft
Lürssen Werft
NEVESBU
SFCN
Singapore Shipbuilding & Engineering
Thyssen
Vosper International
Vosper Singapore
Vosper Thornycroft
Wärtsilä

Patrol boats: launches, tenders and pinnacles
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Crestitalia
De Vries Shipyards
DTCN
Empresa Nacional Bazan
Krögerwerft
Rodriques Cantiere Navale
Singapore Shipbuilding & Engineering
Valtec
Vosper International
Vosper Singapore
Zodiac

Penetrators
Ameeco

Penetrators
Graseby
USEA

Periscope fairings
DTCN
EDO Corporation
MacTaggart Scott

Periscopes
Barr & Stroud
Bofors
DTCN
Kollmorgen

Pipe bending machines
British Shipbuilders
Vickers

Pipes, copper and brass
Fincantieri
Wärtsilä

Pipes, sea water
Fincantieri
Wärtsilä

Piston heads
Korody-Colyer
Wärtsilä

Pistons, piston rings and gudgeon pins
British Shipbuilders
Hatch & Kirk
Korody-Colyer
Wärtsilä

Plotting tables
Philips Elektronikindustrier
SMA

Pontoons, self propelled
Bremer Vulkan
British Shipbuilders
CNIM
DTCN
SFCN
Wärtsilä

Portable equipment for aircraft landing
Officine Panerai

Pressure vessels
Franco Tosi
Vickers
Wärtsilä
Yarrow (Shipbuilders)

Propellants
Bofors
Difesa e Spazio
Empresa Nacional Bazan

Propellers, ship research
British Hovercraft Corporation
British Shipbuilders
DTCN
Empresa Nacional Bazan
Fincantieri

Propellers, ships
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi
Riva Calzoni
Wärtsilä

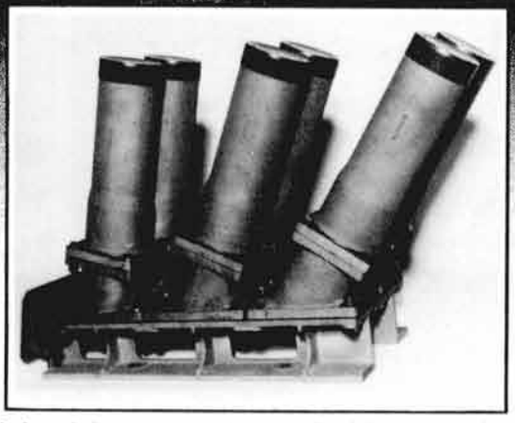
Propeller shafts
Bremer Vulkan

Propeller shafts and intermediate shafts
Empresa Nacional Bazan
Franco Tosi
Vickers
Wärtsilä

Tracor

RBOC/SUPER RBOC

RAPID BLOOM OFFBOARD CHAFF



Tracor's RBOC/SPRBOC, manufactured to U.S. Navy specifications, is a fully integrated, self-contained fire and control countermeasures system for ships and amphibious vehicles. It has passed all applicable environmental tests and has proven its seaworthiness, operational reliability, and effectiveness as a countermeasures system in a variety of applications. It has also completed HERO testing to U.S. Military Standards to ensure system and personnel safety during handling, loading, and operation. Available in two sizes, the MK 33/34 RBOC System and MK 36 Super RBOC (SPR-BOC) System provide threat protection for a variety of ships ranging from small patrol boats to large destroyers. All RBOC and Super RBOC system components are manufactured by Tracor including payload and chaff material. We are a true total source supplier; from systems manufacture to chaff and flare expendables, to integration support.

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Wärtsilä

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Franco Tosi
Vickers

Propulsion machinery
AIFO
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi
Korody-Colyer
MTU
NEVESBU
Paxman Diesels
Rhine-Schelde-Verolme
SEMT Pielstick
Wärtsilä

Propulsion machinery control
Paxman Diesels
SEPA
Vosper Thornycroft

Propulsion machinery surveillance
SEPA
Vosper Thornycroft

Publishers
DMS
Frost & Sullivan

Pumps
AIFO
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi
MacTaggart Scott
Termomeccanica
Wärtsilä

Pumps for diesel fuel, gear
FMC

Pyrotechnics
Stacchini

Radar aerials
DTCN
Hollandse Signaalapparaten
Lockheed Electronics
Philips Elektronikindustrier
Racal-Decca Marine Radar
Raytheon
SMA
Thomson CSF

Radar countermeasures
Elettronica
Hollandse Signaalapparaten
Hycor
Kollmorgen
Philips Elektronikindustrier
Racal-Decca Defense Systems (Radar)
Raytheon
Thomson CSF
Trieste Club

Radar for fire control
DTCN
ELSAG
Ferranti

Radar for fire control
Hollandse Signaalapparaten
Lockheed Electronics
Oerlikon-Bührle
Philips Elektronikindustrier
Raytheon
Sperry Gyroscope
Thomson CSF
Trieste Club

Radar for harbour supervision
DTCN
Hollandse Signaalapparaten
Lockheed Electronics
Racal-Decca Marine Radar
Raytheon
SMA
Thomson CSF
Trieste Club

Radar for navigation warning interception
DTCN
Hollandse Signaalapparaten
Racal-Decca Marine Radar
Raytheon
SMA
Thomson CSF
Trieste Club

Radar transponders
DTCN
Raytheon
Thomson CSF
Trieste Club

Radio, air
Bofors
Thomson CSF

Radio, direction finding
Elettronica
Rediffusion
Thomson CSF

Radio equipment
Bofors
Hollandse Signaalapparaten
McMichael
Philips Elektronikindustrier
Rediffusion
Thomson CSF

Radio navigation equipment
CSEE
Elmer
Racal-Decca Survey
Racal-Decca Navigator
Rediffusion
Thomson CSF

Radio transmitters and receivers
Bofors
Elmer
McMichael
Philips Elektronikindustrier
Rediffusion
Thomson CSF

Radomes
British Hovercraft Corporation
DTCN
Hollandse Signaalapparaten
Lürssen Werft
Raytheon
Thomson CSF

Ramjets
Aérospatiale

Rangefinders
Barr & Stroud
CSEE
Officine Galileo
Thomson CSF

Re-entry device
Hycor

Relocalisation device
DTCN

Remote controls
CSEE
ELSAG
Lürssen Werft
Oerlikon-Bührle
Officine Galileo
OTO Melara
Rediffusion
SEPA
Thomson CSF

Remote level indicator equipment for submarine trim tanks
DTCN
Officine Panerai

Remote power control systems
Breda Meccanica
Thomson CSF
Wärtsilä

Replacement parts for diesel engines
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Cantieri Navali Riuniti
CRM
DTCN
Empresa Nacional Bazan
Fincantieri
Hatch & Kirk
Korody-Colyer
MacTaggart Scott
Paxman Diesels
Wärtsilä

Research ships
British Shipbuilders
Bremer Vulkan
Brooke Marine
Cantieri Navali Riuniti
De Vries Shipyards
DTCN
Empresa Nacional Bazan
Fincantieri
Lürssen Werft
NEVESBU
Rhine-Schelde-Verolme
SFCN
Thyssen
Wärtsilä
Werft Nobiskrug

Reverse reduction gears, oil operated
CRM
Franco Tosi
Isotta Fraschini
Korody-Colyer

Reversing gears
CRM
Empresa Nacional Bazan
Isotta Fraschini
Zahnradfabrik

Rocket launchers
Bofors
Breda Meccanica
British Shipbuilders
CNIM
CSEE
Creusot-Loire
Difesa e Spazio
DTCN
Empresa Nacional Bazan
Oerlikon-Bührle

Roll damping fins
Blohm & Voss
British Shipbuilders
Vickers
Vosper Thornycroft

Der Antrieb
kommt von
mtu la force
motrice
means power
and propulsion

Motoren- und Turbinen-Union Friedrichshafen GmbH/W.-Germany

Rudders
British Shipbuilders
Empresa Nacional Bazan
Fincantieri
Lürssen Werft
Rhine-Schelde-Verolme
Wärtsilä

Rudderstocks
British Shipbuilders
Lürssen Werft
Rhine-Schelde-Verolme
Thyssen
Wärtsilä

Salvage and boom vessels
Brooke Marine
Crestitalia
De Vries Shipyards
Fincantieri
Rodriques Cantiere Navale

Salvage vessels
Bremer Vulkan
British Shipbuilders
Brooke Marine
Cantieri Navali Riuniti
Crestitalia
De Vries Shipyards
Empresa Nacional Bazan
Fincantieri
Lürssen Werft
SFCN
Wärtsilä

Scientific instruments
Barr & Stroud
DTCN
Sippican Corporation
Thomson CSF

Security engineering
Wärtsilä

Self homing torpedo guidance head
Thomson CSF
USEA

Ship and submarine design
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Ingenieurkontor Lübeck
NEVESBU
Rhine-Schelde-Verolme
Vickers

Ship defence systems
Bofors
Breda Meccanica
British Shipbuilders
CSEE
Creusot-Loire
FMC
Hycor
Lockheed Electronics
Thomson CSF
Vickers
Vosper Thornycroft

Ship brass foundry for sonar and radar
DTCN
Trieste Club

Ship machinery
Blohm & Voss
Bremer Vulkan
British Shipbuilders
DTCN
Empresa Nacional Bazan
Fincantieri
MTU

Ship machinery
Rhine-Schelde-Verolme
Wärtsilä

Ship stabilisers
Ateliers et Chantiers du Havre
Blohm & Voss
British Shipbuilders
Cantieri Navali Riuniti
DTCN
Fincantieri
Vosper Thornycroft

Ship systems engineering
Ateliers et Chantiers du Havre
Cantieri Navali Riuniti
CSEE
DTCN
NEVESBU
Rodriques Cantiere Navale
Sintra/Alcatel
Thomson CSF
Vickers
Wärtsilä
Yarrow (Shipbuilders)

Ships magnetic compass test tables
DTCN

Shipboard air-conditioning and ventilating plant
Vickers
Vitroselenia

Shipbuilders
Bremer Vulkan
British Shipbuilders
Brooke Marine
De Vries Shipyards
Empresa Nacional Bazan
Krögerwerft
SFCN
Thyssen
Vickers
Vosper Singapore
Yarrow (Shipbuilders)
Wärtsilä

Shipbuilders and ship repairers
Ateliers et Chantiers du Havre
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Brooke Marine
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Lürssen Werft
NEVESBU
Rhine-Schelde-Verolme
SFCN
Rodriques Cantiere Navale
Singapore Shipbuilding & Engineering
Thyssen
Vosper Shiprepairers
Wärtsilä
Werft Nobiskrug
Yarrow (Shipbuilders)

Shipbuilders & ship repairers
CNIM
Singapore Shipbuilding & Engineering

Shipyard development
Vosper International

Simulators
CSEE
DTCN
Elettronica
ELSAG
Ingenieurkontor Lübeck

Simulators
Philips Elektronikindustrier
Rediffusion
SEPA
Sintra/Alcatel
Thomson CSF
Trieste Club
USEA
Vosper Thornycroft

Smoke indicators
Barr & Stroud

Sockets and plugs, electric and watertight
Ameeco
Thomson CSF

Sockets and plugs multi-pin patterns
Thomson CSF

Socket terminations
Ameeco

Sonar equipment
Ameeco
DTCN
EDO Corporation
Graseby
Hollandse Signaalapparaten
McMichael
Raytheon
Sintra/Alcatel
Sperry Gyroscope
Thomson CSF
Trieste Club
USEA

Sonar equipment (passive active-intercept)
DTCN
EDO Corporation
Graseby
McMichael
Raytheon
Sintra/Alcatel
Thomson CSF
Trieste Club
USEA

Sonar equipment, hull fittings and hydraulics
DTCN
EDO Corporation
Graseby
Hollandse Signaalapparaten
Sintra/Alcatel
Thomson CSF
Trieste Club
USEA

Sonar interceptor, direct finder
EDO Corporation
Thomson CSF
Trieste Club

Sonar ranges (design and installation)
DTCN
Graseby
McMichael
Raytheon
Thomson CSF
Trieste Club

Sonobouys
EDO Corporation
McMichael
Misar
Sippican, Ocean Systems
Thomson CSF
USEA

Spare parts for diesel engines
Blohm & Voss
Bremer Vulkan
Cantieri Navali Rivuniti
Empresa Nacional Bazan
Franco Tosi

KRUPP
Sonar contact 235°
Range 26.000 yds
Doppler slightly high
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in research, development and production.
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Spare parts for diesel engines
Hatch & Kirk
Korody-Colyer
SACM
Wärtsilä

Spare parts for gas turbine (marine)
Fiat

Speed boats
Crestitalia
DTCN
Empresa Nacional Bazan

Stabilising equipment
Ateliers et Chantiers du Havre
Blohm & Voss
British Shipbuilders
Cantieri Navali Riuniti
DTCN

Stabilising equipment for fire control
DTCN
Hollandse Signaalapparaten
Kollmorgen
Lockheed Electronics
Philips Elektronikindustrier
Selin

Steam turbines
Blohm & Voss
Bremer Vulkan
Cantieri Navali Riuniti
CNIM
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi

Steam-raising plant, conventional
Blohm & Voss
CNIM
Empresa Nacional Bazan

Steam-raising plant, nuclear
DTCN
Yarrow (Shipbuilders)

Steel-alloy and special steel forgings, plates and sections, stampings
DTCN
Wärtsilä

Steering gear
British Shipbuilders
Cantieri Navali Riuniti
Vosper Thornycroft
Wärtsilä

Sternframes
British Shipbuilders
Wärtsilä

Stress relieving
Fincantieri
Wärtsilä

Submarine batteries
Accumulatorenfabriken Wilhelm Hagen

Submarine diesel engines
Paxman Diesels

Submarine distress buoy
DTCN
Thomson CSF
Trieste Club

Submarine fire control
DTCN
Ferranti
Hollandse Signaalapparaten
Philips Elektronikindustrier
Singer Librascope
Sintra/Alcatel
Trieste Club
Vickers

Submarine periscopes
Barr & Stroud
DTCN
Trieste Club

Submarine propulsion batteries
Accumulatorenfabriken Wilhelm Hagen

Submarine-launched buoy systems
Sippican, Ocean Systems
Trieste Club

Submarine pyrotechnic signal
Stacchini

Submarines
Accumulatorenfabriken Wilhelm Hagen
British Shipbuilders
DTCN
Empresa Nacional Bazan
Fincantieri
Ingenieurkontor Lübeck
NEVESBU
Rhine-Schelde Verolme
Thyssen
Trieste Club
Vickers

Submarines, conventional
British Shipbuilders
DTCN
Empresa Nacional Bazan
Fincantieri
Ingenieurkontor Lübeck
NEVESBU
Rhine-Schelde-Verolme
Thyssen
Trieste Club
Vickers

Submarines, unmanned submersibles
Ingenieurkontor Lübeck
Riva Calzoni
SEPA
Trieste Club

Submarines, wet
DTCN
Ingenieurkontor Lübeck
Rhine-Schelde-Verolme

Superheaters
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi

Suppport services for marine & aircraft gas turbines
Fiat

Support service vessels
Brooke Marine
De Vries Shipyards
Empresa Nacional Bazan
Lürssen Werft
Singapore Shipbuilding & Engineering
Thomson CSF
Thyssen
Wärtsilä
Zodiac

Support services
Blohm & Voss
Bremer Vulkan
Brooke Marine
Cantieri Navali Riuniti
DTCN
Fincantieri
Lürssen Werft
SEPA
Singapore Shipbuilding & Engineering
Thomson CSF
Vickers

Support services
Vitroselenia
Vosper International
Wärtsilä
Yarrow (Shipbuilders)

Survey equipment
DTCN
Racal-Decca Survey

Surveys/market intellingence
DMS
Frost & Sullivan

Switchboards
Blohm & Voss
Lürssen Werft
Thomson CSF
Vitroselenia
Vosper Singapore
Vosper Thornycroft
Wärtsilä

Switchboards and switchgear
Lürssen Werft
Thomson CSF
Vitroselenia

Tactical training simulators
British Hovercraft Corporation
CSEE
DTCN
FIAR
Ingenieurkontor Lübeck
Oerlikon-Bührle
Philips Elektronikindustrier
SEPA
Sintra/Alcatel
Thomson CSF

Tankers
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Krögerwerft
Lürssen Werft
Thyssen
Wärtsilä
Werft Nobiskrug

Tankers, small
Bremer Vulkan
British Shipbuilders
DTCN
Empresa Nacional Bazan
Fincantieri
Singapore Shipbuilding & Engineering
Thyssen
Wärtsilä
Yarrow (Shipbuilders)

Tanks, oil and water storage
DTCN

Technical publications
Singer Librascope
Vickers
Vosper Thornycroft

Technical support services
Vosper International

Telecommunication equipment
Hollandse Signaalapparaten
Matra
McMichael
Rediffusion
Thomson CSF
Trieste Club

Telemotors
MacTaggart Scott

Telephones, loud speaking
Thomson CSF

EXOCET

a family of long range missiles

FOR SEA POWER

The MM 38 uses the full detection range of the launcher's radars.

The AM 39 can be launched at all altitudes.

MM 40 has an over-the-horizon capability.

- ☐ They can be:
  - Surface-launched (MM 38 - MM 40) from ships of all tonnages, or from fixed or mobile coastal batteries.
  - Air-launched (AM 39) from helicopters, strike aircraft or maritime patrol aircraft.
  - Sub-launched (under development).
- ☐ They have basically the same principle of operation and the same maintenance equipment.
- ☐ They are FIRE AND FORGET and SEA SKIMMING, which makes them practically INVULNERABLE to all enemy defences.
- ☐ They provide SUPERIORITY in anti-surface warfare to those countries which adopt them, owing to their range, speed, accuracy and killing power.

24 countries have chosen the EXOCET.

More than 1.600 EXOCET missiles have been ordered.

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aerospatiale
DIVISION ENGINS TACTIQUES
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Tenders
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Empresa Nacional Bazan
NEVESBU
Singapore Shipbuilding & Engineering
Wärtsilä

Test equipment for fire control systems
CSEE
DTCN
FMC
Lockheed Electronics
Philips Elektronikindustrier
SEPA
Singer-Librascope
Sintra/Alcatel
Thomson CSF
Vitroselenia

Test facilities for propulsion systems
SEPA

Textile fibres
DTCN

Thermal imaging systems
Barr & Stroud
Selenia

Throughwater communications
Graseby
Thomson CSF

Timers
Borletti
Officine Panerai

Torpedo control plugs and sockets
Ameeco

Torpedo control systems
DTCN
ELSAG
Philips Elektronikindustrier
SEPA
Thomson CSF
Trieste Club

Torpedo decoys
Graseby
Singer-Librascope
Trieste Club

Torpedo depth and roll recorders
DTCN
Trieste Club

Torpedo electric motors
Selin

Torpedo order and reflection control
DTCN
Trieste Club

Torpedo side-launchers
Crestitalia
DTCN

Torpedoes and torpedo tubes
DTCN
Empresa Nacional Bazan
Sintra/Alcatel
Trieste Club

Torsion meter, propeller shaft
Ameeco

Training equipment
CSEE
DTCN
Gajon
Graseby
Oerlikon-Bührle
Officine Panerai

Training equipment
Philips Elektronikindustrier
SEPA
Sintra/Alcatel
SMA
Thomson CSF
Vosper Thornycroft

Training programmes
British Shipbuilders
CSEE
Empresa Nacional Bazan
Gajon
Lürssen Werft
Philips Elektronikindustrier
Sintra/Alcatel
Thomson CSF
Vitroselenia
Vosper Thornycroft
Wärtsilä

Training services
British Hovercraft Corporation
British Shipbuilders
CSEE
Empresa Nacional Bazan
Gajon
Lürssen Werft
OTO Melara
Philips Elektronikindustrier
Rediffusion
SEPA
Singer Librascope
Sintra/Alcatel
SMA
Thomson CSF
Vickers
Vosper Thornycroft
Wärtsilä

Trawlers
Bremer Vulkan
British Shipbuilders
Crestitalia
Empresa Nacional Bazan
Fincantieri
SFCN
Wärtsilä

Tugs
Bremer Vulkan
British Shipbuilders
Cantieri Navali Riuniti
Crestitalia
De Vries Shipbuilders
Empresa Nacional Bazan
Fincantieri
Halter Marine
SFCN
Singapore Shipbuilding & Engineering
Wärtsilä

Turbine gears
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fiat
Fincantieri
Franco Tosi

Turbines
Blohm & Voss
Bremer Vulkan
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi
Rhine-Schelde-Verolme
Yarrow (Shipbuilders)

Turbines, exhaust
Cantieri Navali Riuniti

Turbines, exhaust
DTCN
Fincantieri

Turbines, gas marine
DTCN
Fiat

Turbines, steam marine
Blohm & Voss
Bremer Vulkan
Cantieri Navali Riuniti
Empresa Nacional Bazan
Fincantieri
Franco Tosi

TV-systems/trackers
FIAR

Underwater acoustic systems
EDO Corporation
Elettronica
Officine Panerai
Racal-Decca Survey
Singer Librascope
Sintra/Alcatel
Thomson CSF
Trieste Club
USEA

Underwater communication
EDO Corporation
Thomson CSF
Trieste Club
USEA

Underwater lights
DTCN
Officine Panerai
Trieste Club

Underwater television equipment
DTCN
EDO Corporation
Kollmorgen
Thomson CSF
Trieste Club

Valves, automatic plate or disc
Trieste Club
Wärtsilä

Valves and cocks
Wärtsilä

Valves and cocks, hydraulic
MacTaggart Scott
Riva Calzoni
Trieste Club
Wärtsilä

Variable frequency generators
Selin

Voltage regulators, automatic
Selin

Warship design (system engineering)
OTO Melara

Warship design
Brooke Marine
NEVESBU
Vosper International
Vosper Thornycroft
Wärtsilä
Yarrow (Shipbuilders)

Warship repairers
British Shipbuilders
Bremer Vulkan
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Krögerwerft
Rhine-Schelde-Verolme

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Electronic Warfare – HF Vehicle and Manpack Radios – Message Processing

M E L

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Message Processing
Manor Royal, Crawley,
West Sussex RH10 2PZ, England

Warship repairers
Singapore Shipbuilding & Engineering
Thyssen
Vosper Singapore
Wärtsilä
Werft Nobiskrug
Yarrow (Shipbuilders)

Warships
Blohm & Voss
Bremer Vulkan
British Shipbuilders
Brooke Marine
Cantieri Navali Riuniti
CNIM
DTCN
Empresa Nacional Bazan
Fincantieri
Krögerwerft
NEVESBU
Rhine-Schelde-Verolme
Singapore Shipbuilding & Engineering
Thyssen
Vickers
Vosper International
Vosper Singapore
Vosper Thornycroft
Wärtsilä
Werft Nobiskrug
Yarrow (Shipbuilders)

Water jet units
Castoldi

Water tube boilers
Cantieri Navali Riuniti
DTCN
Empresa Nacional Bazan
Fincantieri
Franco Tosi
Rhine-Schelde-Verolme

Weapon control systems
Aérospatiale
CSEE
ELSAG
Ferranti
FMC
Lockheed Electronics
McMichael

Weapon control systems
Philips Elektronikindustrier
Rank Pullin Controls
Selin
SEPA
Singer Librascope
Sintra/Alcatel
Thomson CSF
Trieste Club
Vickers

Weapon systems
Aérospatiale
Bofors
Breda Meccanica
CNIM
Creusot-Loire
CSEE
DTCN
ELSAG
FMC
Lockheed Electronics
Matra
Misar
Oerlikon-Bührle
Officine Galileo
Raytheon
SEPA
Sintra/Alcatel
Sistel-Sistemi
Sperry Gyroscope
Thomson CSF
Trieste Club

Weapon systems, sonar components
Creusot-Loire
DTCN
EDO Corporation
Graseby
McMichael
Oerlikon-Bührle
Raytheon
Sintra/Alcatel
Thomson CSF
Trieste Club
USEA

Weapon systems, engineering
Creusot-Loire
CSEE

Weapon systems, engineering
Ferranti
FMC
Matra
OTO Melara
Sintra/Alcatel
SMA
Vosper International
Vosper Thornycroft
Yarrow (Shipbuilders)

Welding: arc, argon arc or gas
Bremer Vulkan
British Shipbuilders
DTCN
Empresa Nacional Bazan
Rhine-Schelde-Verolme
Wärtsilä

Winches
Ateliers et Chantiers du Havre
British Shipbuilders
DTCN
Rhine-Schelde-Verolme
Thyssen
Vickers

Wrist compasses and depth meters for underwater operators
DTCN
Officine Panerai

X-ray work
DTCN
Empresa Nacional Bazan
Wärtsilä

Yachts, powered
Crestitalia
De Vries Shipyards
DTCN
Empresa Nacional Bazan
Fairey Marine
Krögerwerft
Lürssen Werft
Rodriques Cantiere Navale
Wärtsilä

Tomorrow we'll be facing a different sea.

Our image of the sea may change any moment. This requires alertness and possibly action, which means a need of new ships. Here we come in to help find the best solution.

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Don't hesitate to contact Nevesbu when you want to anticipate at new naval tasks. We have a briefing team available at short notice.

Nevesbu

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In the Combat Information Center aboard the USS *Virginia*, the best view is one that enables EW operators to quickly track and identify each incoming threat. On the *Virginia*–and on other ships of the fleet–that capability is provided by the most advanced EW system in the world today... the Raytheon-developed SLQ-32.

As prime contractor for the SLQ-32, Raytheon has total system responsibility–from design and production to integration and logistic support. Currently, 80 systems have been delivered to the U.S. Navy. Systems are presently operational on vessels that range from guided missile cruisers and destroyers to frigates and ammunition ships.

The SLQ-32 provides ships with the capability to counter a complex, multiple-missile attack. It tracks and identifies incoming targets and simultaneously gives bearing and identification of missile-firing aircraft, ships, or submarines, so that the most effective EW tactics and weapons can be employed. The system utilizes Raytheon-developed multiple-beam antennas that permit early detection, instantaneous 360-degree coverage, and simultaneous receive and jam functions.

The SLQ-32 is produced in three versions. The first provides early warning, identification, and direction-finding of threatening radar-guided missiles. Modular additions provide the second version with even greater frequency surveillance coverage to aid in threat identification. The third version–

How the Navy views anti-ship missiles: SLQ-32

with the greatest capability–adds high-power jamming. The SLQ-32 can be operated by a minimum number of personnel. And maintenance–with the aid of computer-controlled, system diagnostic tests–is almost entirely a shipboard operation.

For further information on the SLQ-32, write on your letterhead to Raytheon Company, Government Marketing, 141 Spring Street, Lexington, Massachusetts 02173.

RAYTHEON

EW system.

HDW

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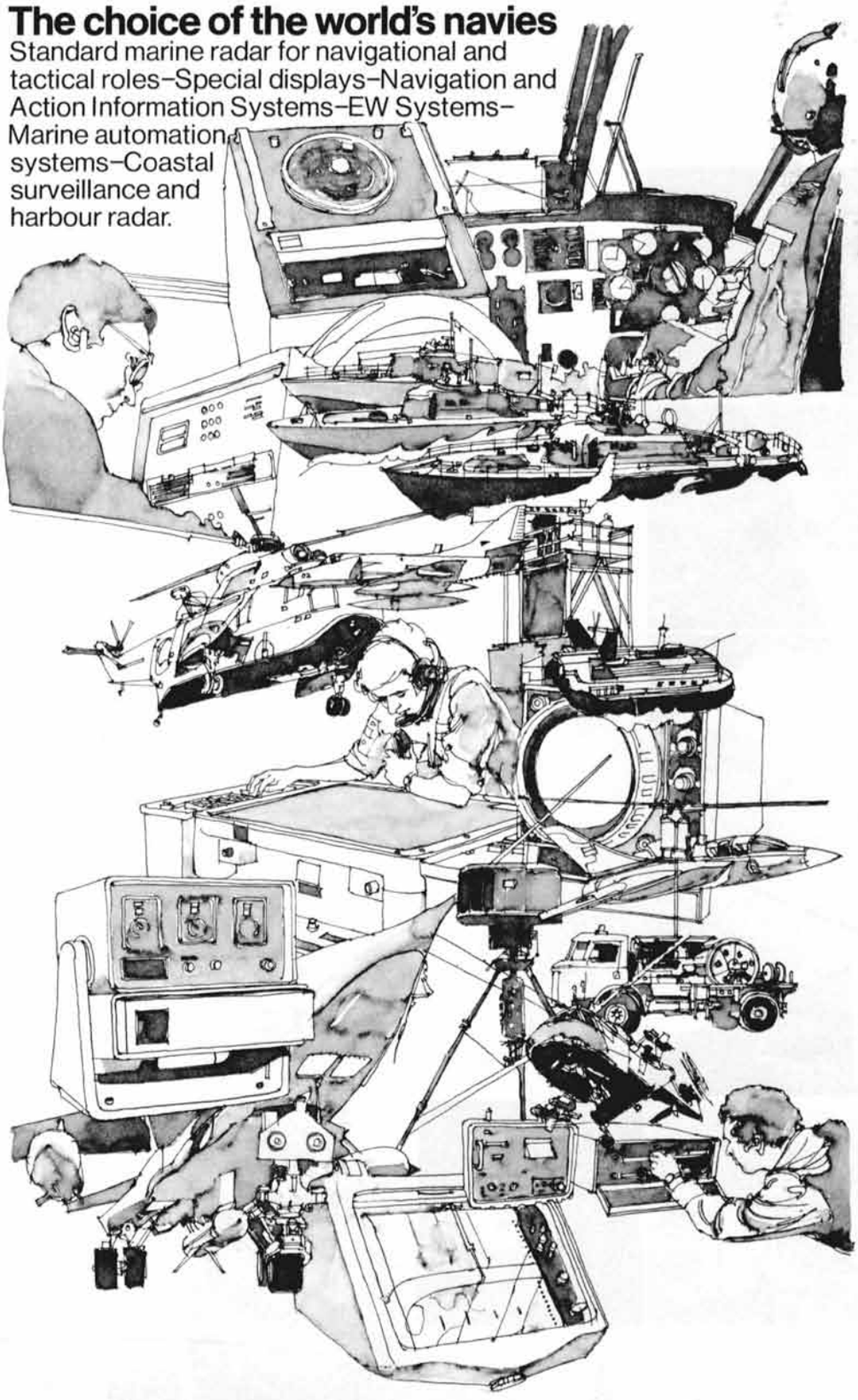

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All above systems are fully automatic, remotely controlled, and installed aboard cruisers, destroyers, frigates and many smaller ships.

For more than 40 years, FMC has been a major design and production force that helps the free world stay ready and alert to maintain peace. Today, we are also a prime source of innovative design for a broad range of new defense systems. Large caliber guns such as the Vertical Load Gun Mount for shipboard use, and the automatic 155mm gun for the U.S. Army's new Division Support Weapon System, for example. Both systems will increase firepower and versatility with ammunition common to NATO nations.

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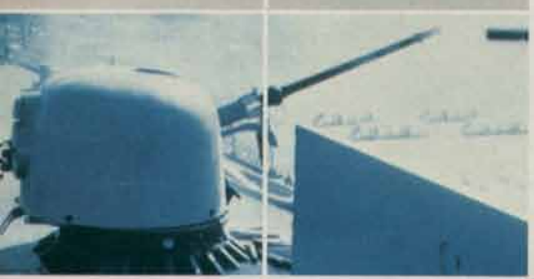
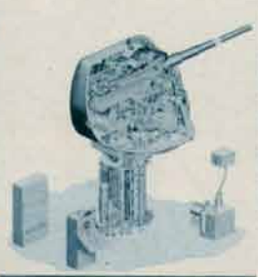
From concept to production to logistics support, FMC performs. On time and on cost.





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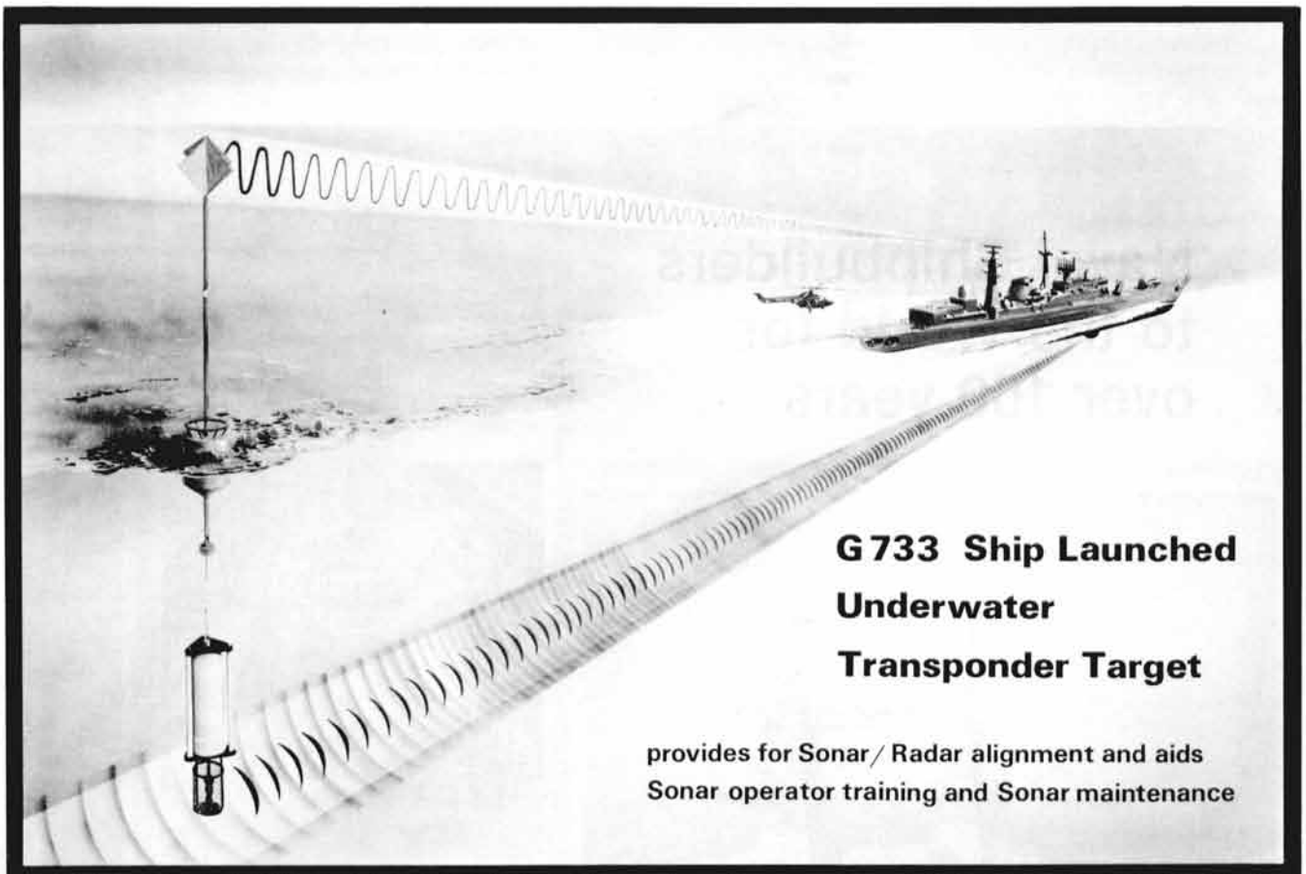

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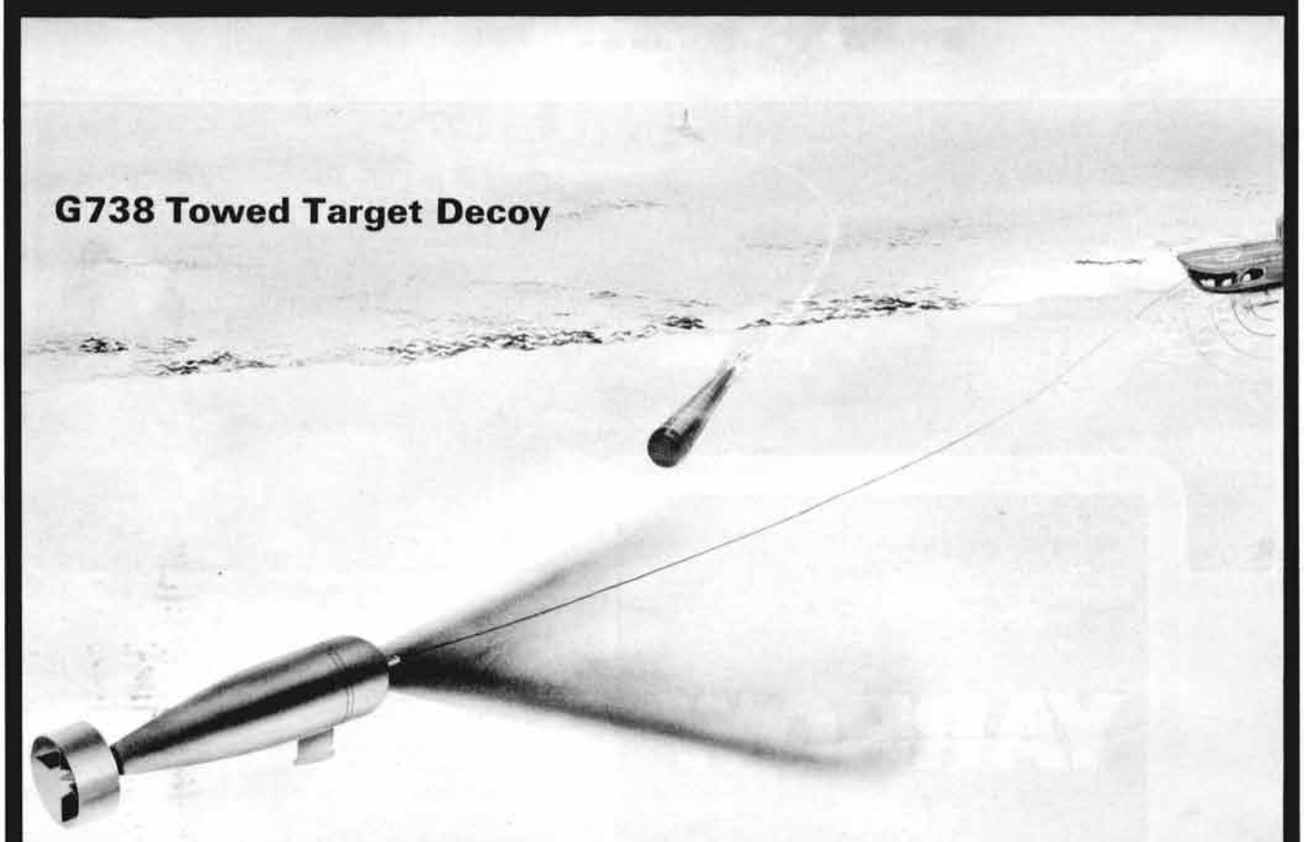

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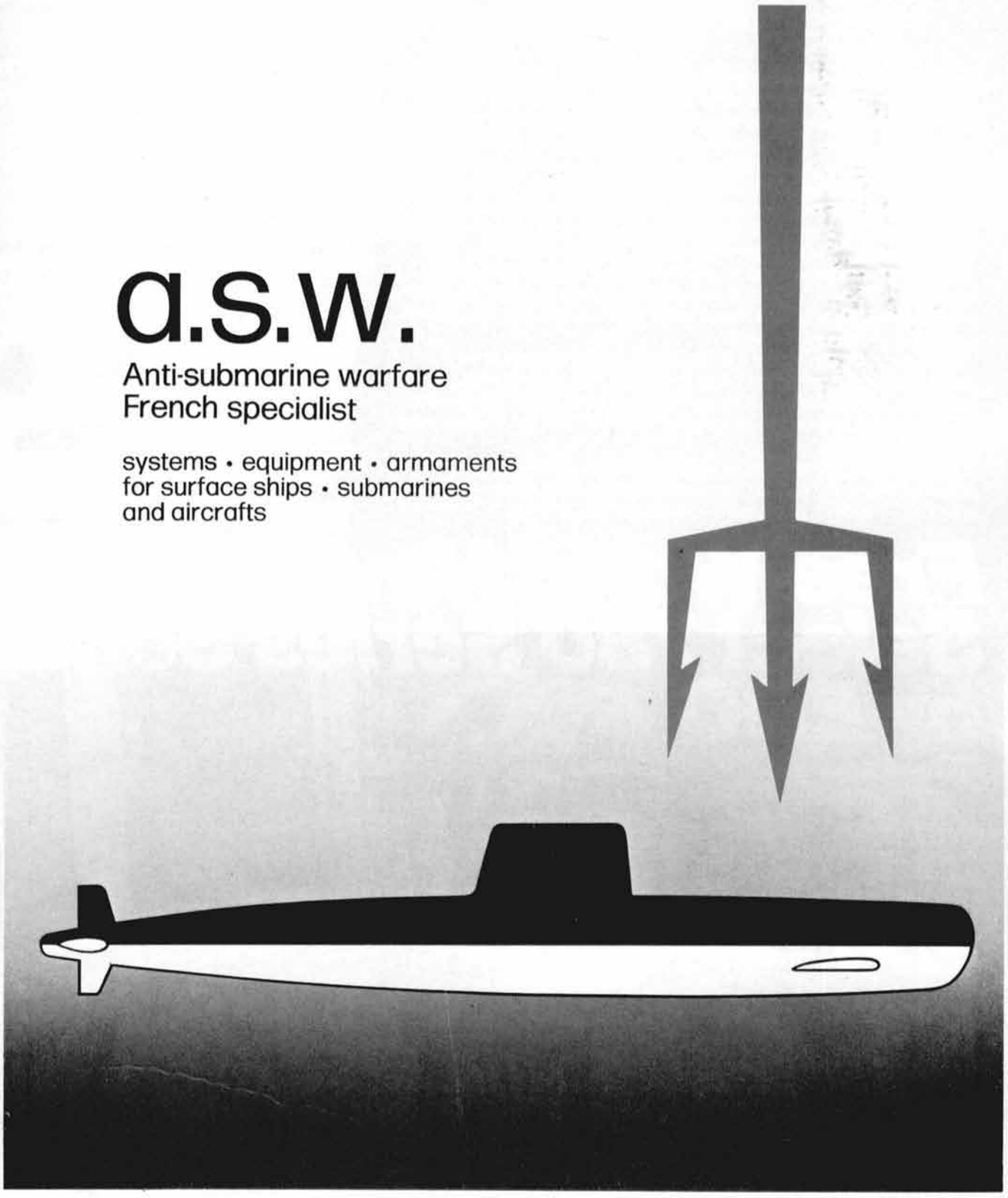

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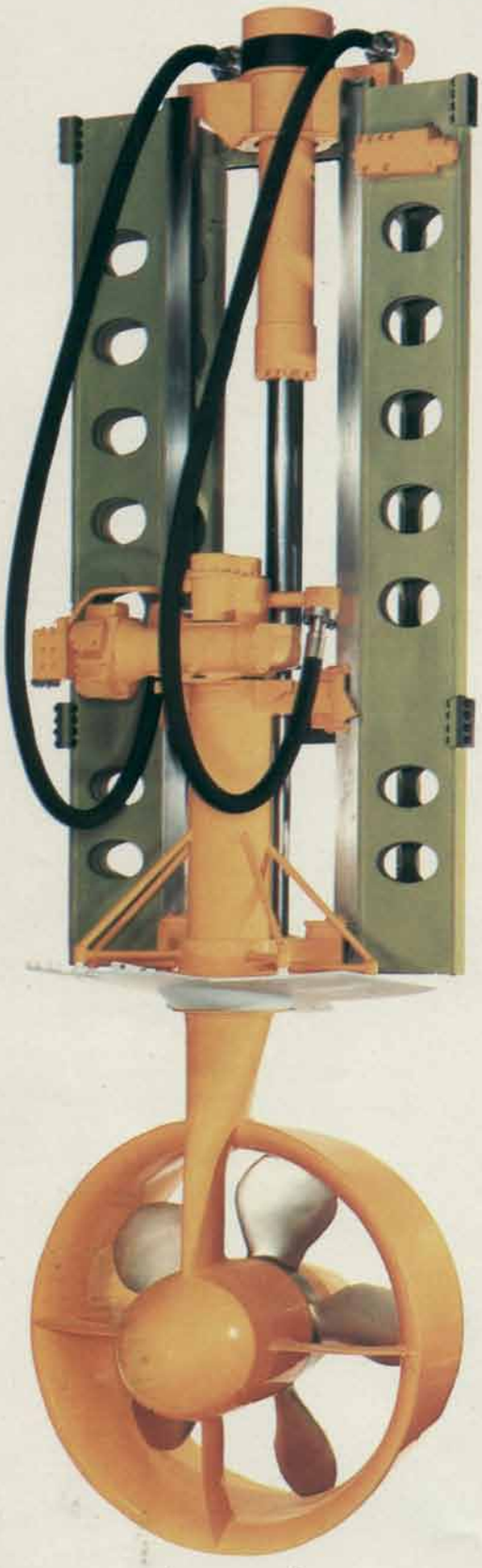

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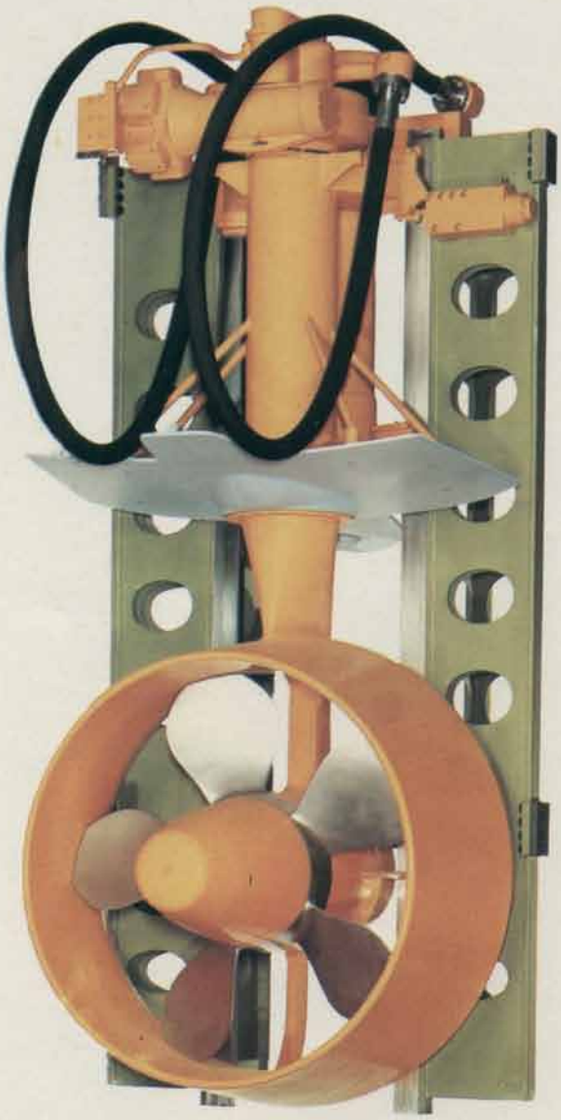

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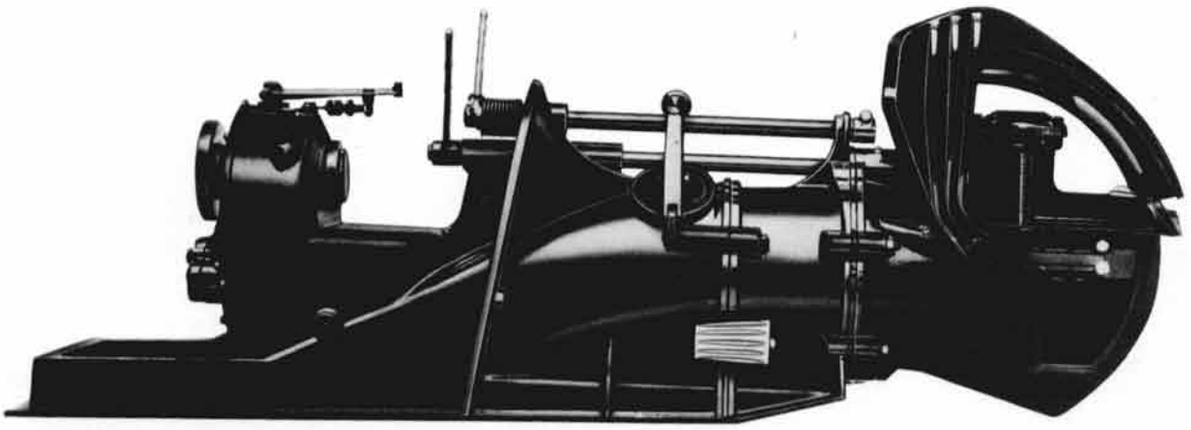

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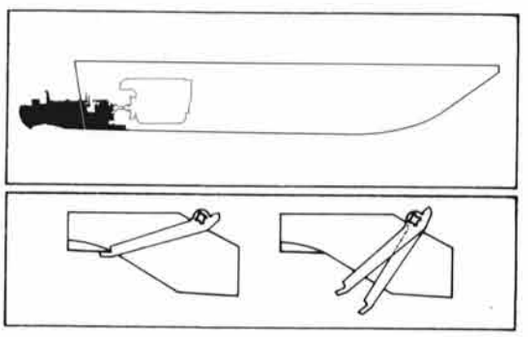

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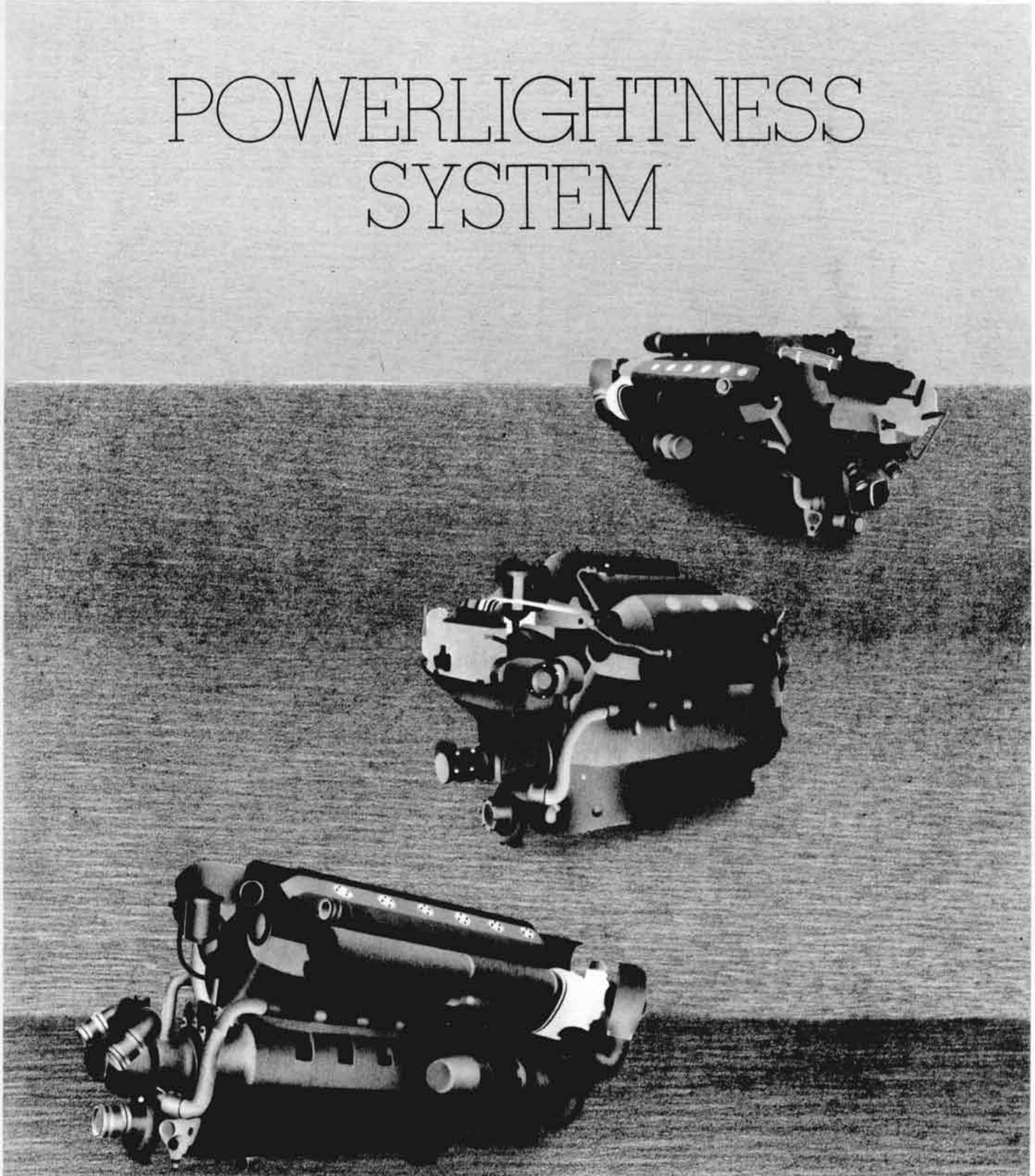

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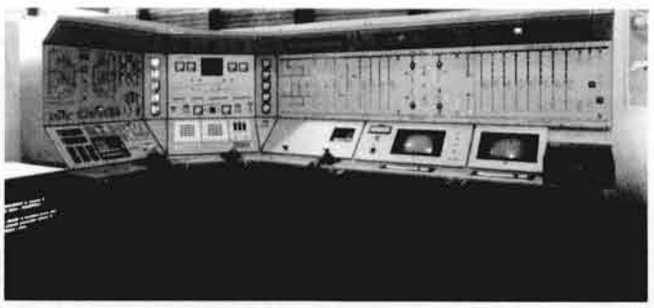
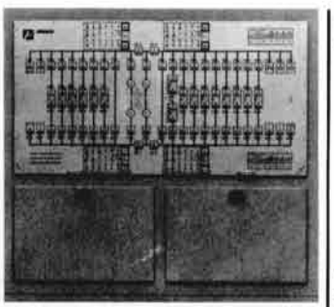
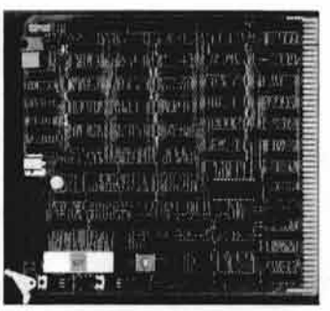
View of the automatic control system of the Frigate «Maestrale» class





Electrical power plant simulator

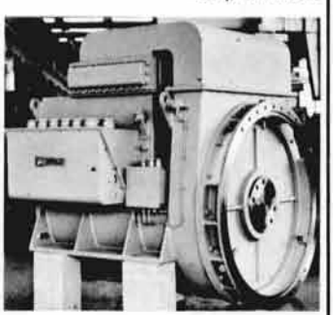
Microcomputer ANSALDO MIG-17



Electrical plant control and hull service console of the «Maestrale» Frigate

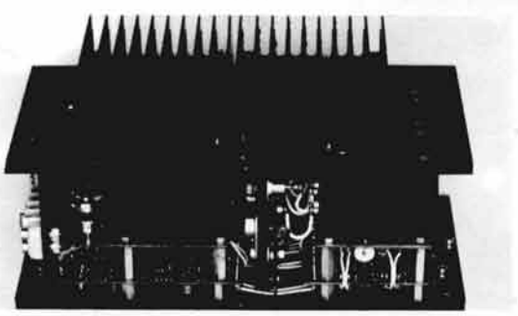
- Automatic control of electric plant for navy ships
- Microcomputer oriented for automation of propulsion plant
- Electric power generation and distribution network
- Electric plant simulation
- Electric propulsion control panel on submarine
- A.C. generators for electric system on board
- Drydock system
- Electrical systems for port cranes
- Electronic equipment on ships

1950 KVA generator for Diesel electric propulsion rescue ship «Anteo»



Propulsion control panel on submarine «SAURO» class

ANSALDO military power supply



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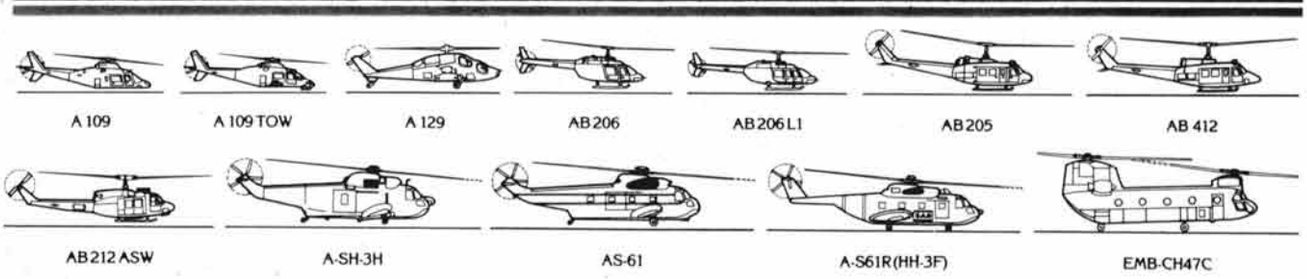
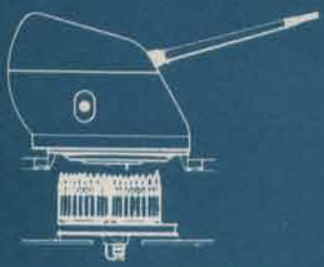
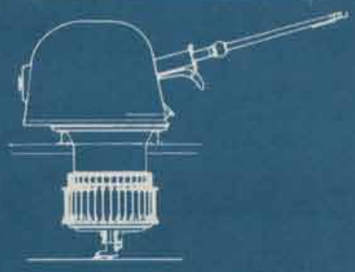
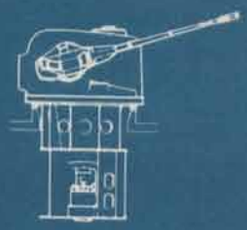




OTO 127/54 COMPACT MOUNTING (5-INCH)



OTO 76/62 COMPACT MOUNTING (3-INCH)



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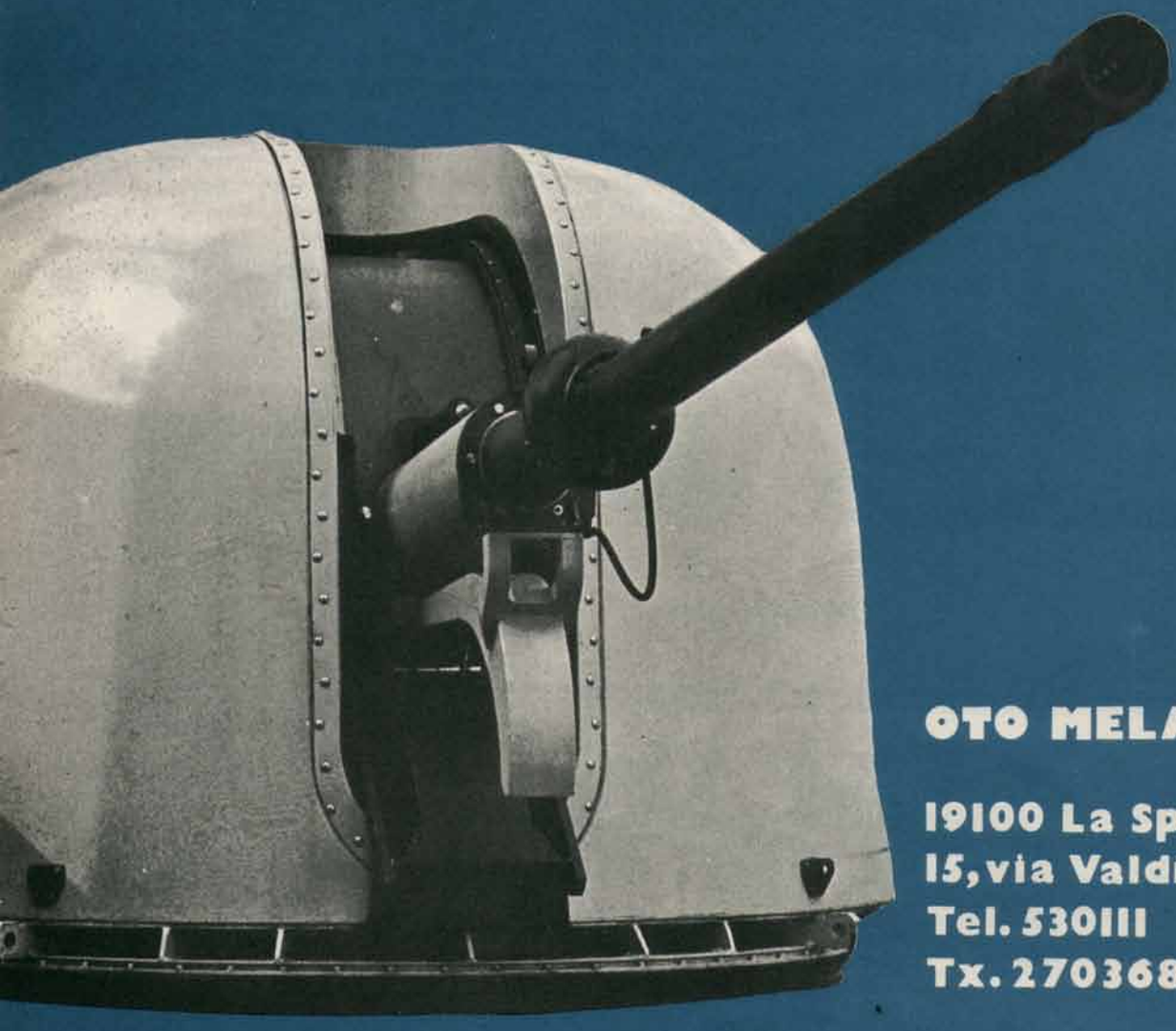

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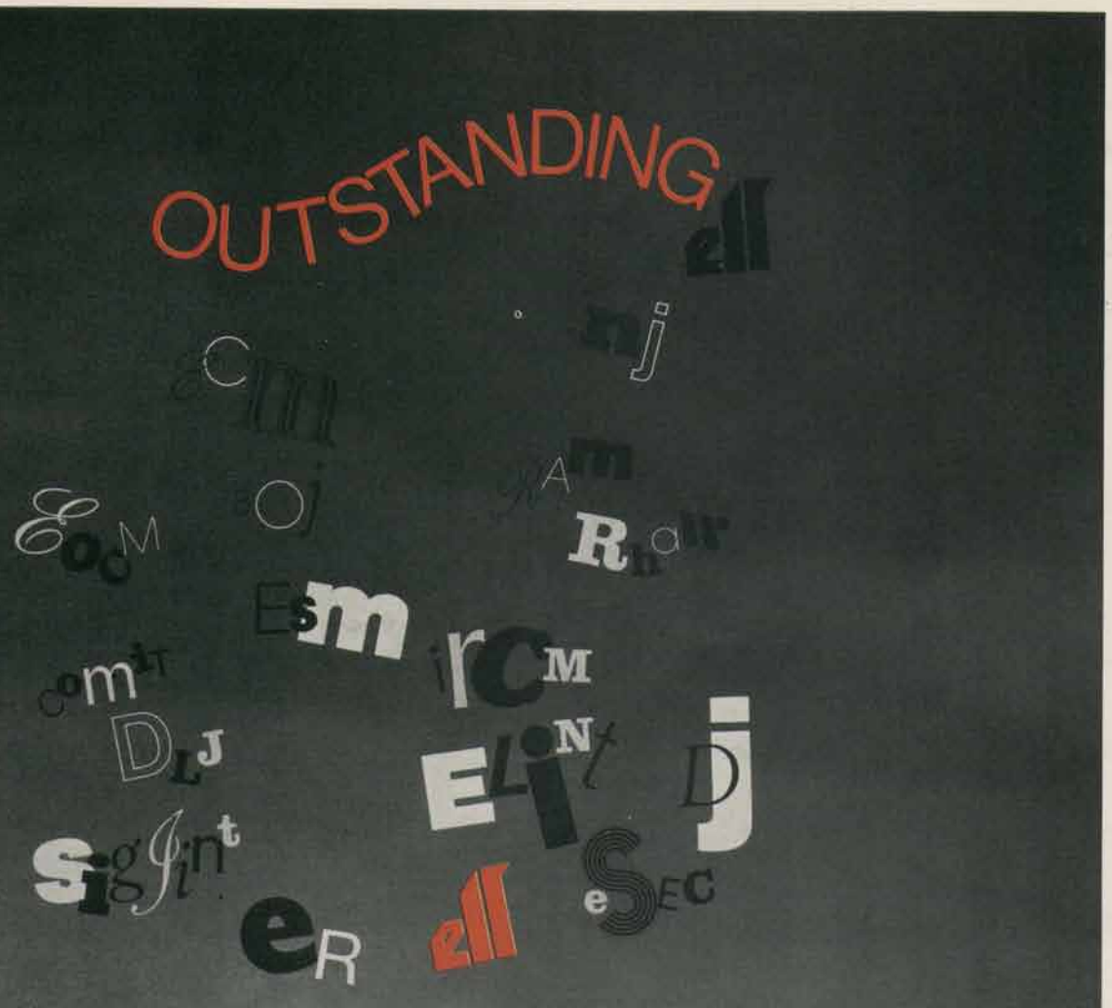

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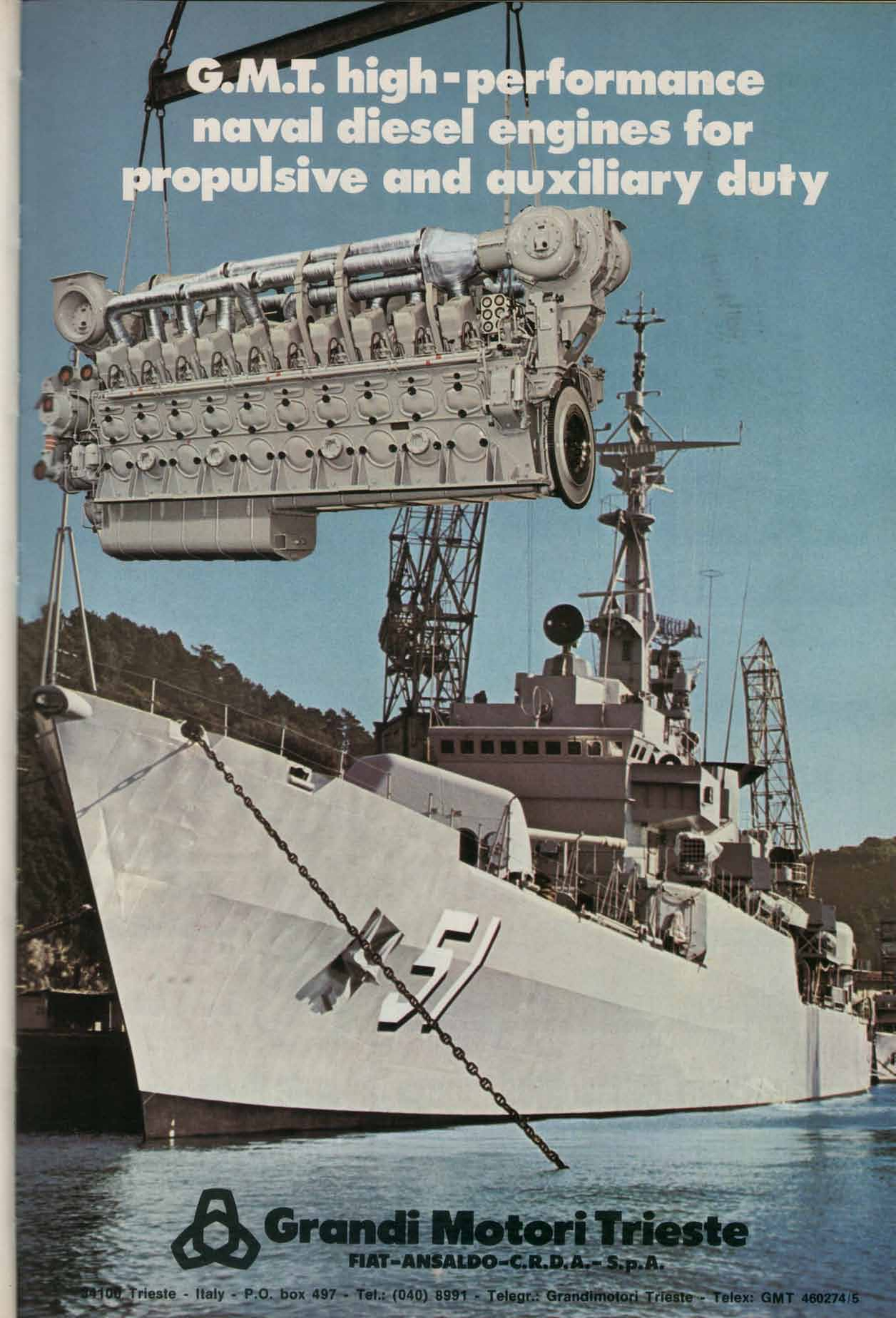
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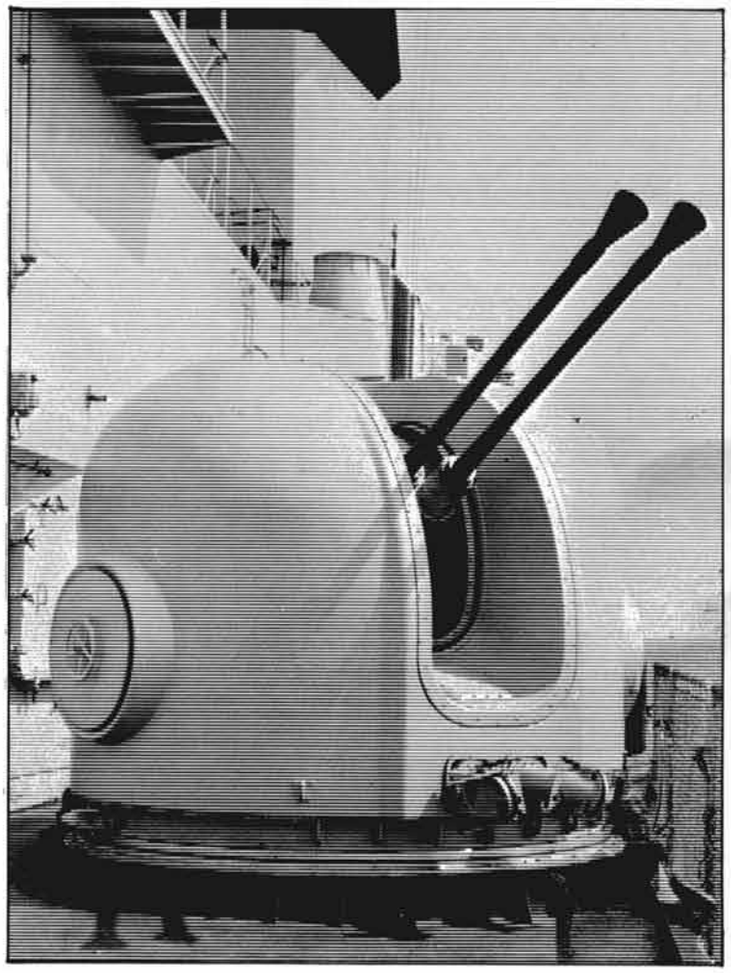

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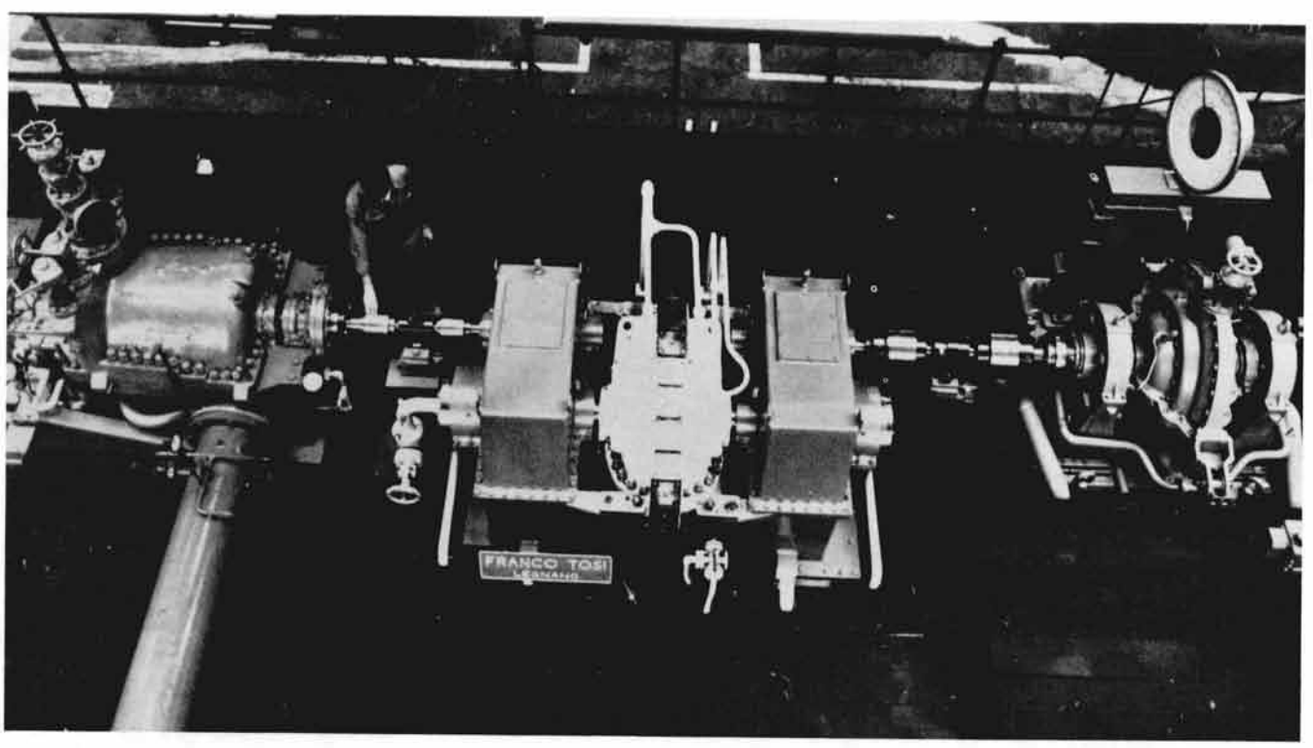

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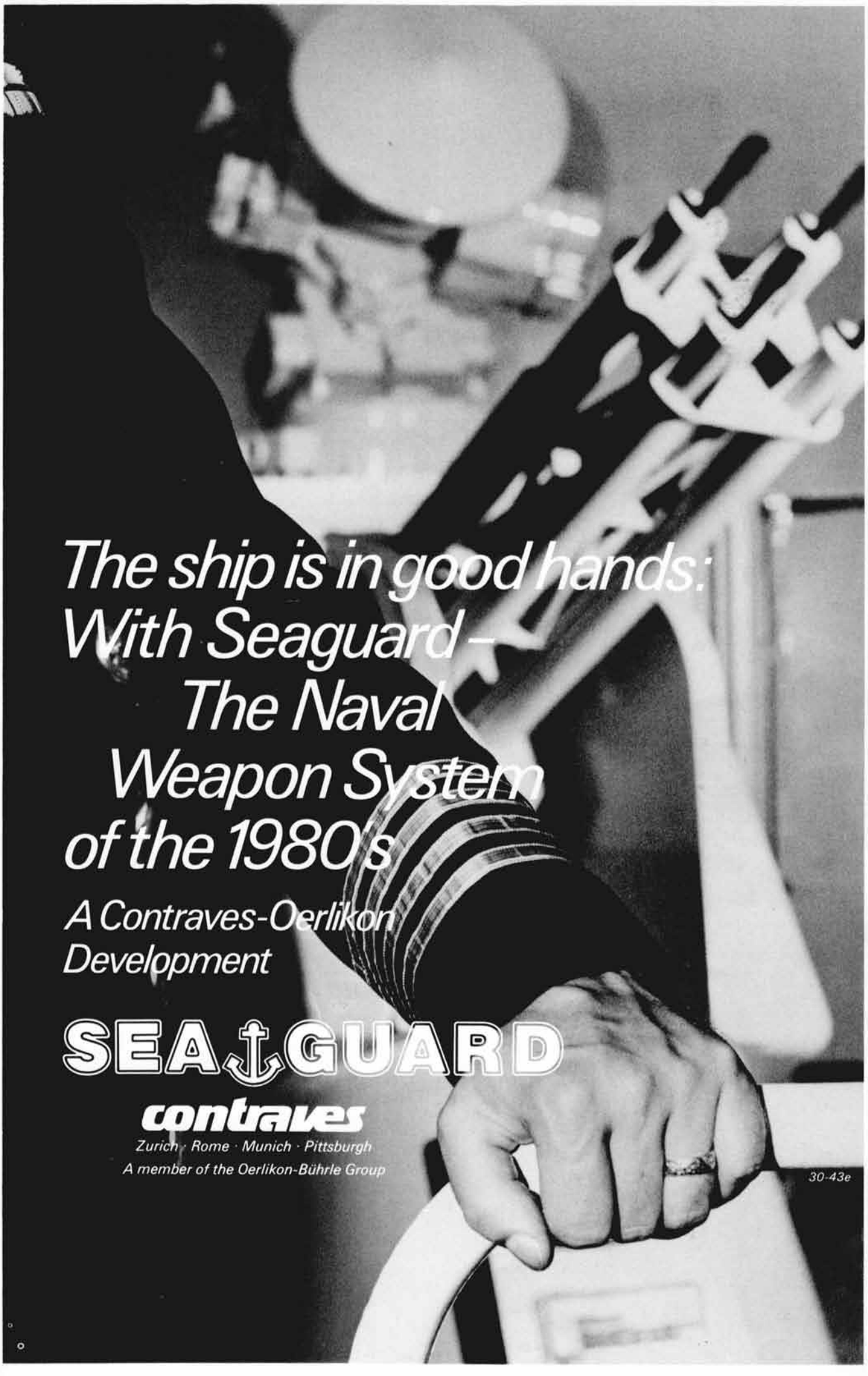
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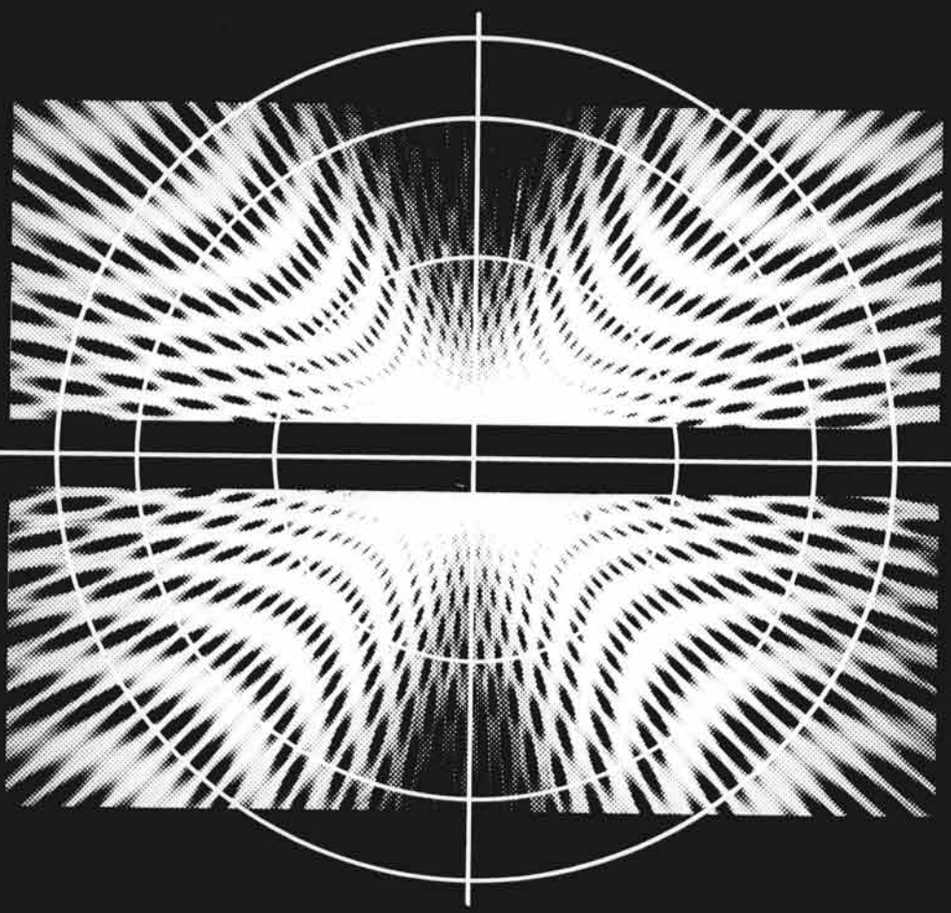

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Propulsion	2 x MTU-12V 331 TC 92
developing a total of	2900 HP
Maximum speed	35 knots

MV 55 PATROL BOAT

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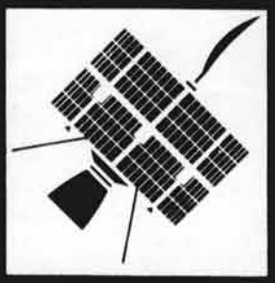

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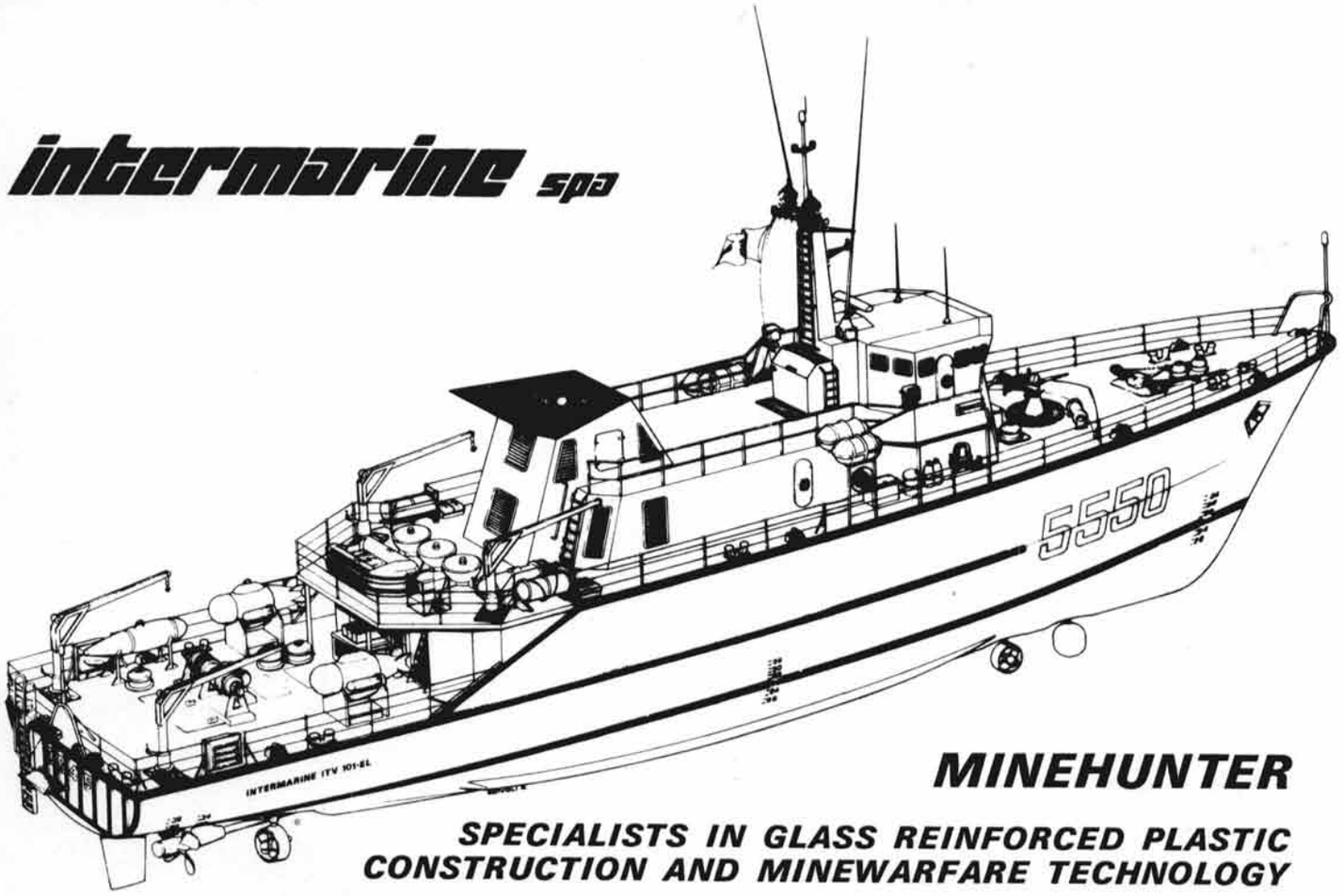

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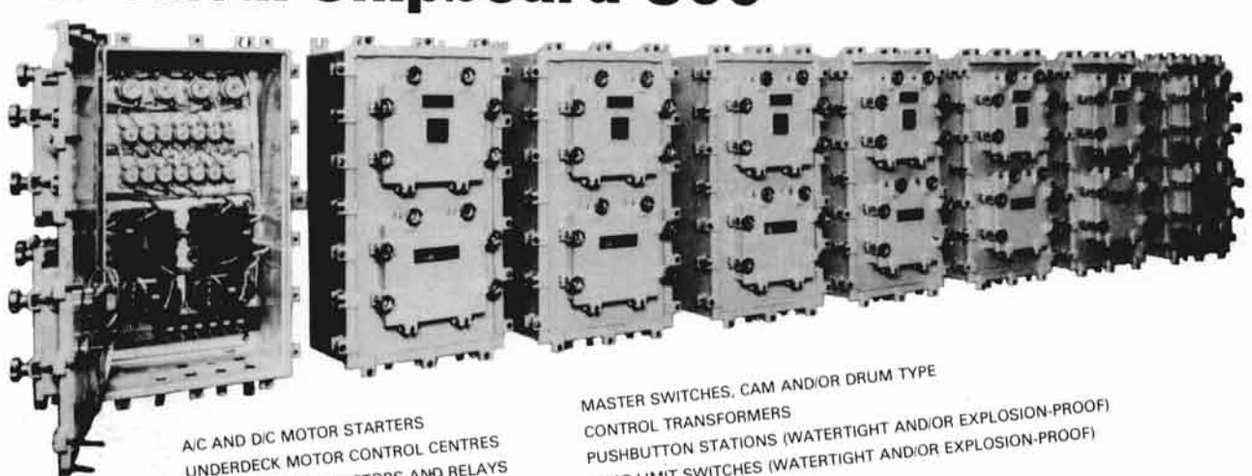

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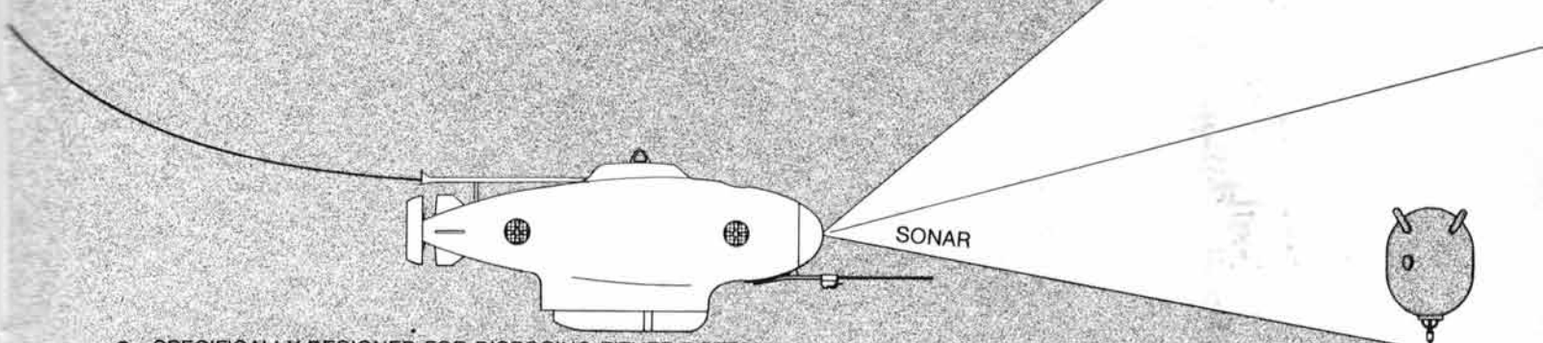

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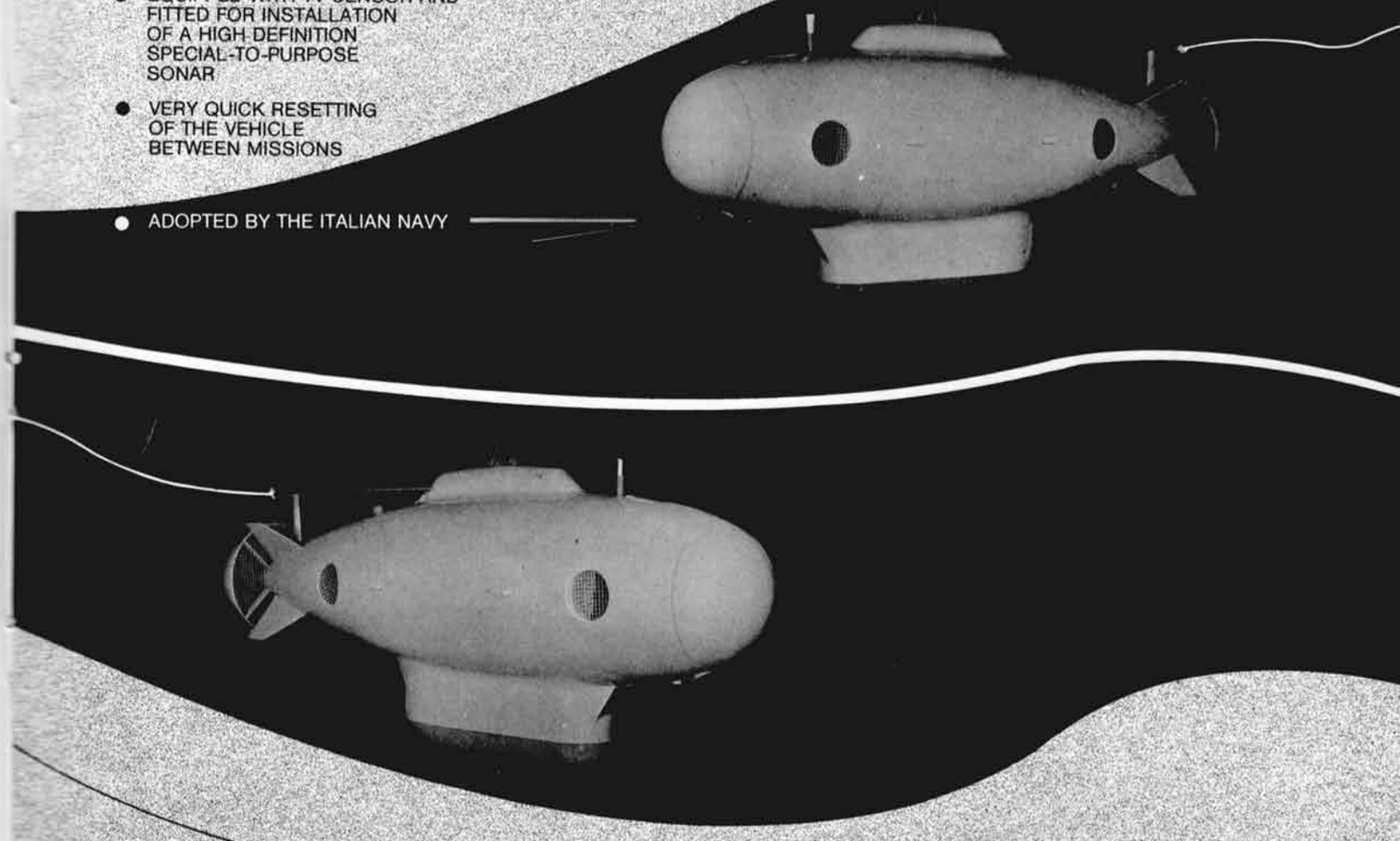

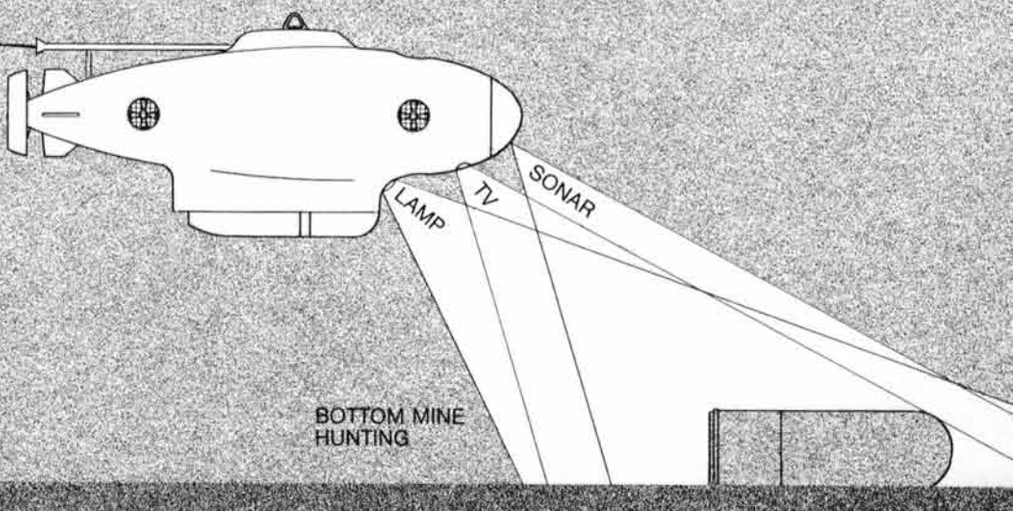

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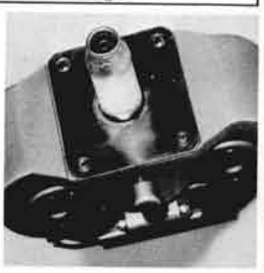

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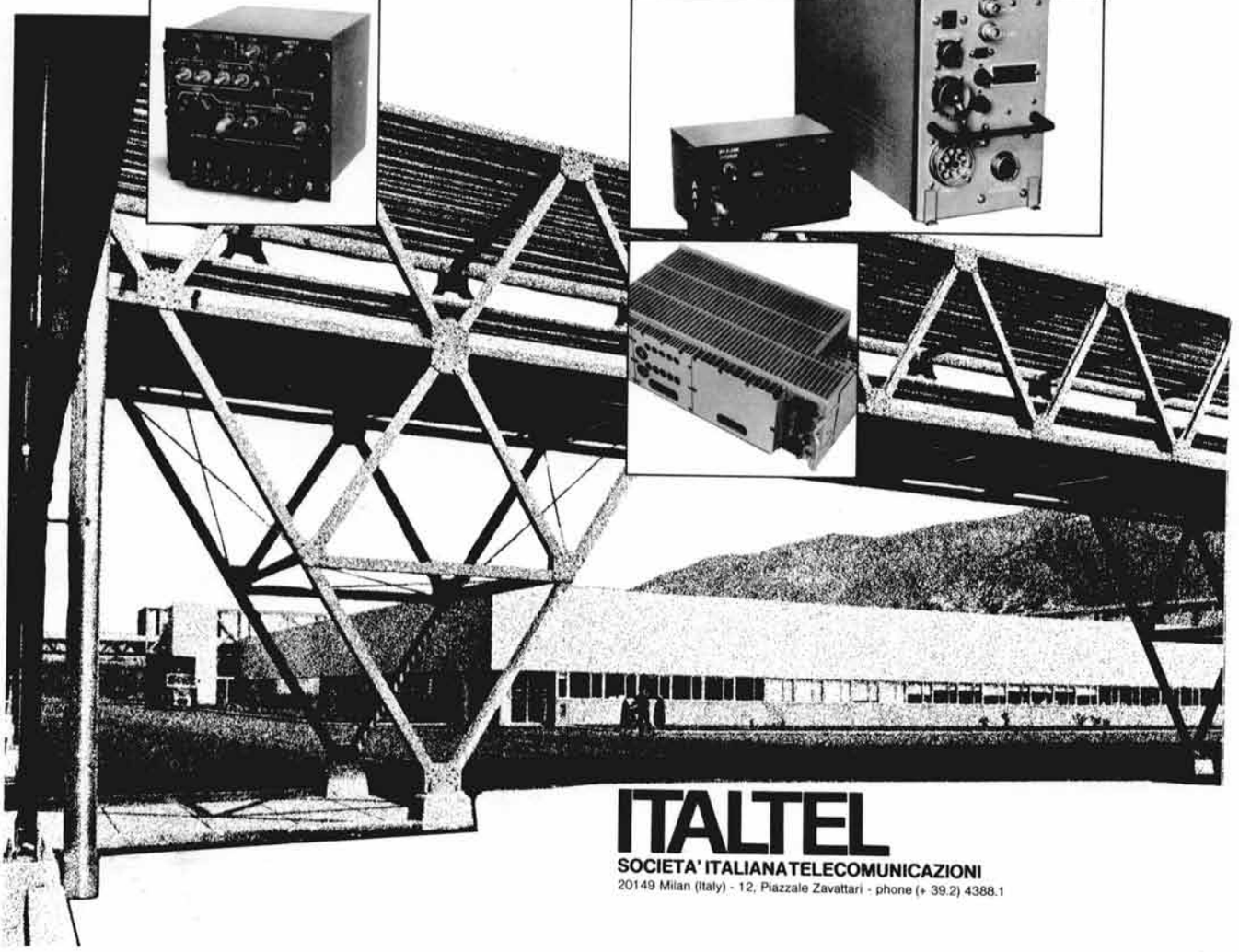

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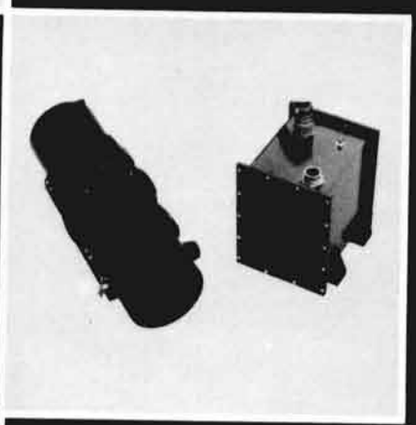

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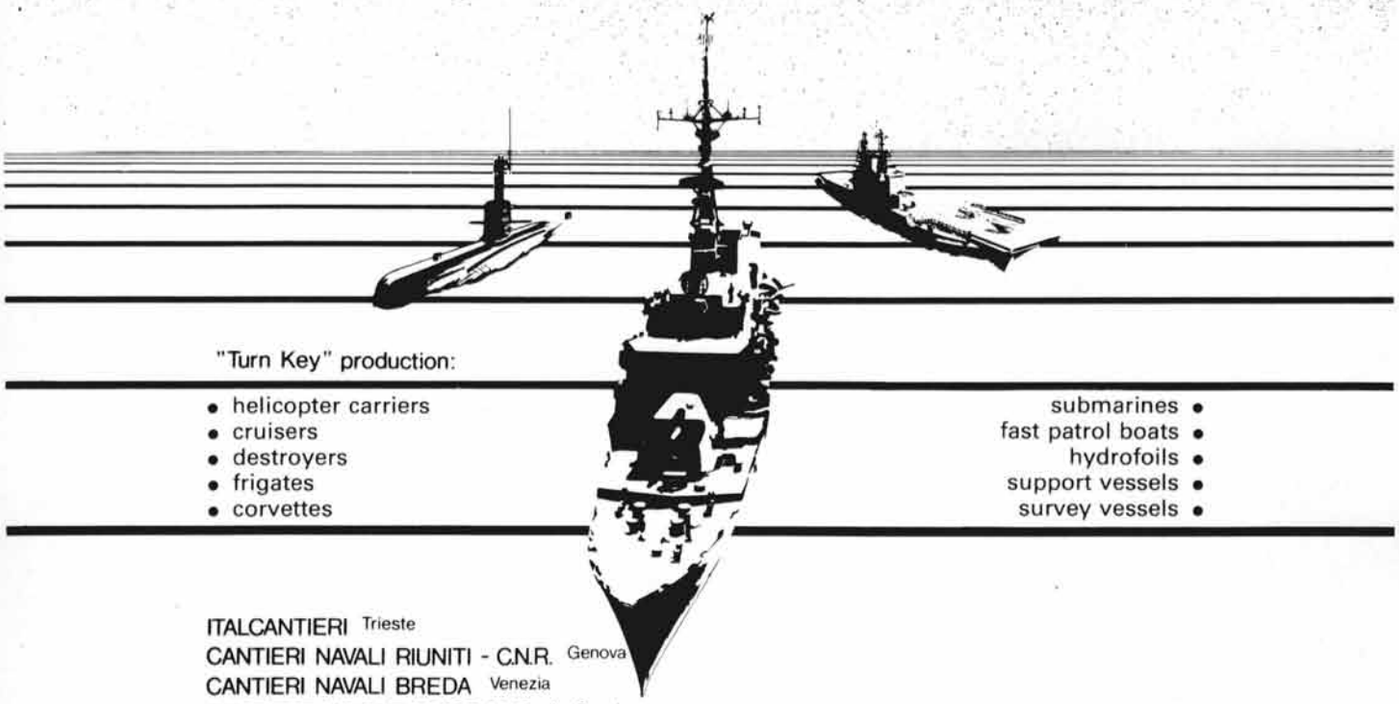

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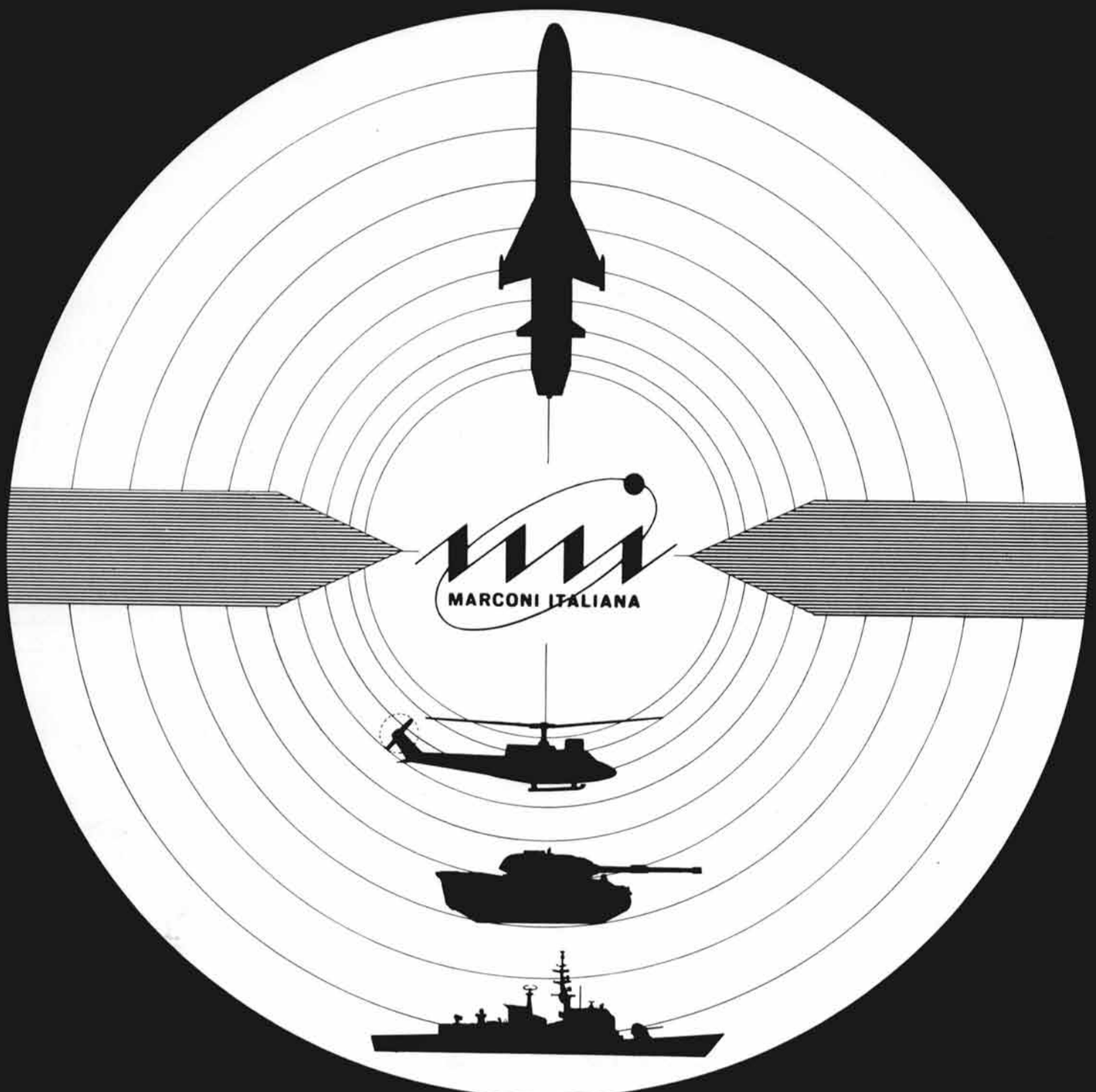

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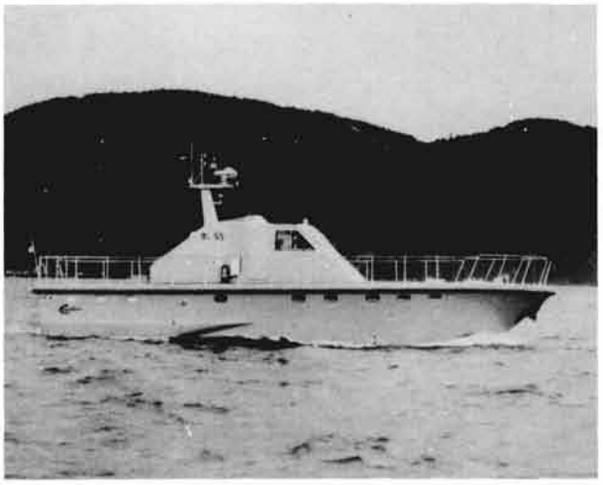

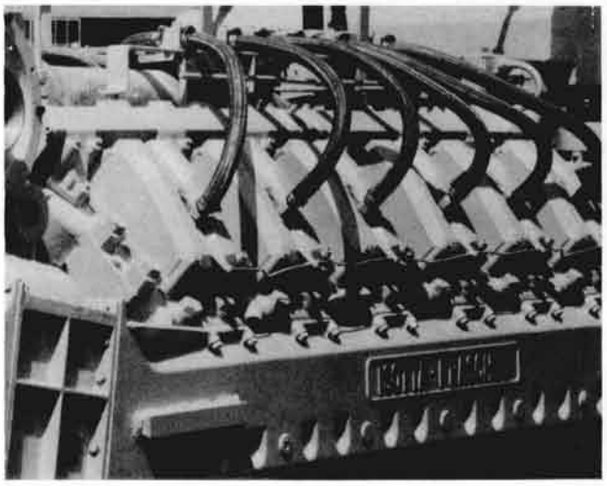

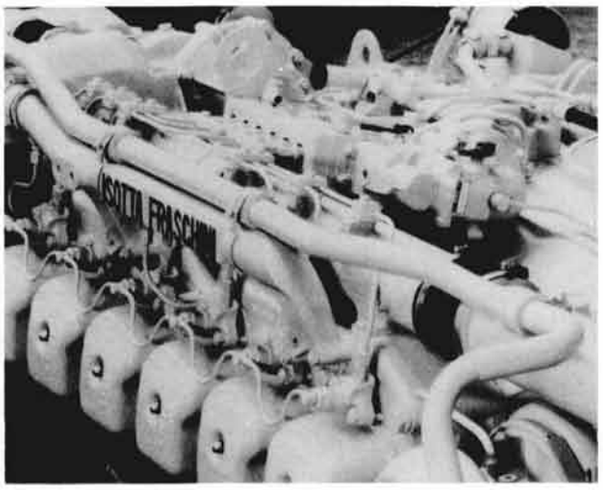

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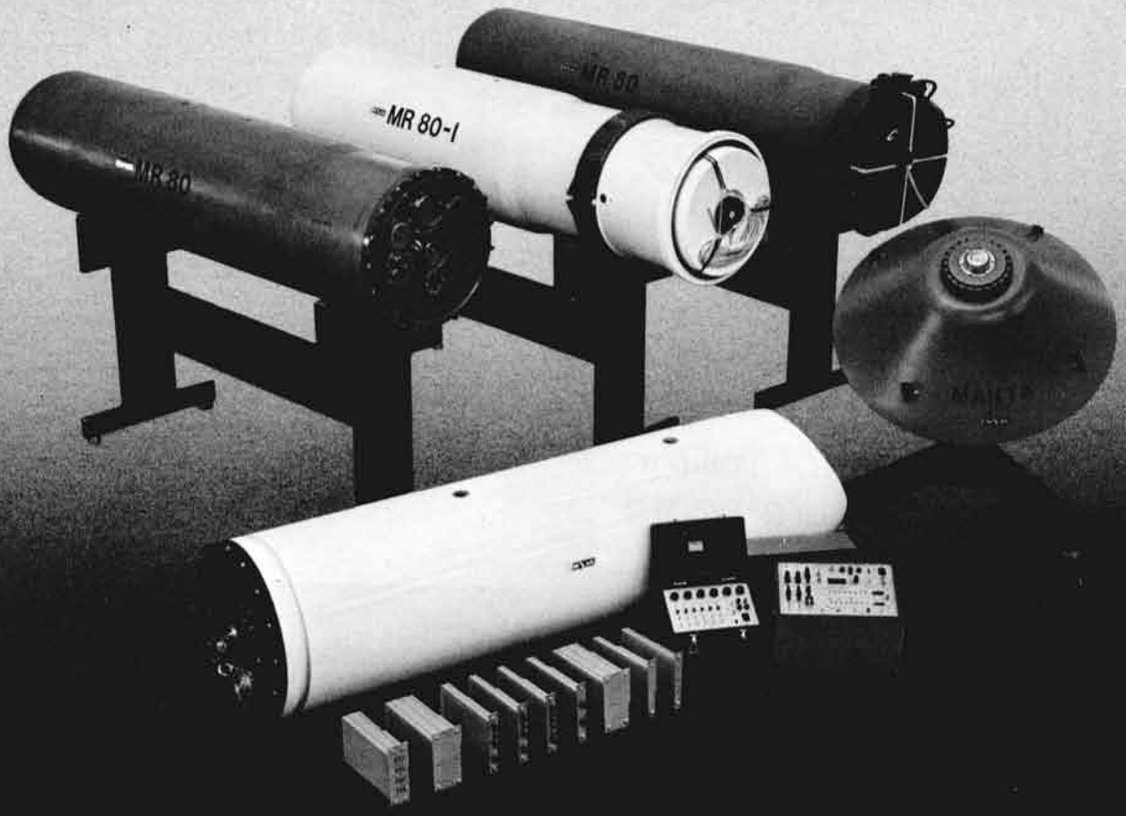

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Cantiere Naval Tecnica S p A
22 Via S Raineri
98100 Messina
ITALY

Your reference
Our reference DGM/2900/007/07
Date 6 May 1977

Dear Sirs

HMS 160

Part of the task of the Ship Department at Bath is to keep a brief on developments of hydrofoils throughout the world and to assess possible applications to meet naval requirements.

We would be interested to receive from you technical literature on HMS 160 to help in these studies.

We are also interested to know if opportunities might be forthcoming for this Ministry to conduct seakeeping trials in a HMS 160 during the winter months say November - February.

Yours faithfully,

P PHILLIPS
COMMANDER, ROYAL NAVY
for DIRECTOR GENERAL SHIPS

Procurement Executive Ministry of Defence
ADMIRALTY MARINE TECHNOLOGY ESTABLISHMENT (HASLAR)
Haslar Gosport Hants PO12 2AG
Telex 86145
Telephone Portsmouth 22351 ext 41442

Mr D Di Blasi
Cantiere Navaltecnica Spa
22 Via S Raineri
Messina
ITALY

Your reference
Our reference MS/2115/462 /78
Date 6 February 1978

Dear Mr Di Blasi

HMS 160 CONDOR V SEAKEEPING TRIALS

The waverider buoy data measured during the trial period 21-26 November 1977 and the observed sea states and wind speeds, are included herewith.

On 23 November (day 2) it was too rough to deploy the buoy and no waverider records were taken.

Thank you for your co-operation during the trial.

Yours faithfully

G W ROBSON
for Director

OBSERVED SEA STATES

	Day 1 22 November 1977	Day 2 23 November 1977	Day 3 25 November 1977
Wind Speed Knots Beaufort Wind Scale Wind Direction	15-20 5-6 N to NW	25-27 6-7 W	12 3-4 NW
Tidal Strength Tidal Direction	1-2 NE	- -	0-1 SW
Maximum Waveheight (m) Significant Waveheight (m) Sea State	2.0 1.2 4	6.0 3.5 7 +	1.0 0.6 2

Procurement Executive Ministry of Defence
Block G Foxhill Bath BA1 5AB
Telephone 0225 6811 ext 2368

Dott Ing L Rodriques
Cantiere Navaltecnica S.P.A.
22 Via S Raineri
MESSINA
Italy

Your reference
Our reference 2900/051/04/D113
Date 7 December 1977

Dear Sir

HMS 160 CONDOR V SEAKEEPING TRIALS

On behalf of the Ship Department I would like to thank you for the help we have received from your Company in carrying out the above trial. As you have no doubt heard from Mr Nasso, the trials were successful, and we will be sending the film that was shot and the recorded motion data when they are available.

Thank you again for your co-operation.

Yours faithfully

M J CHANNAN
for DIRECTOR GENERAL SHIPS

MARK 5 STUDIO

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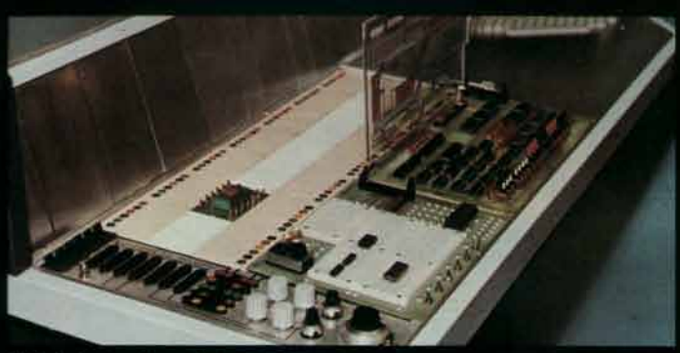

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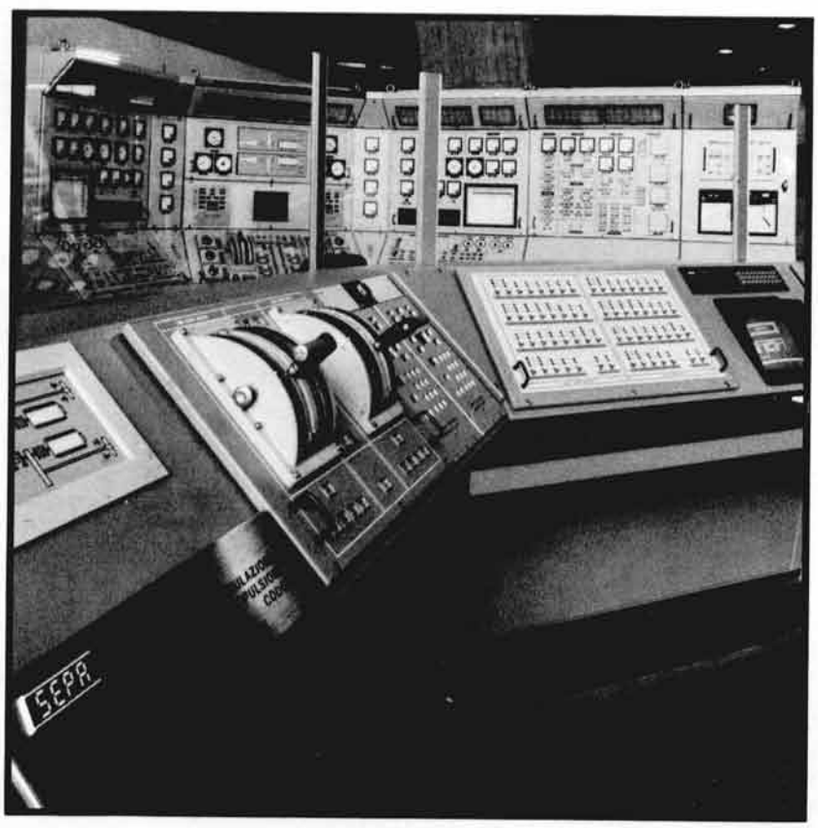

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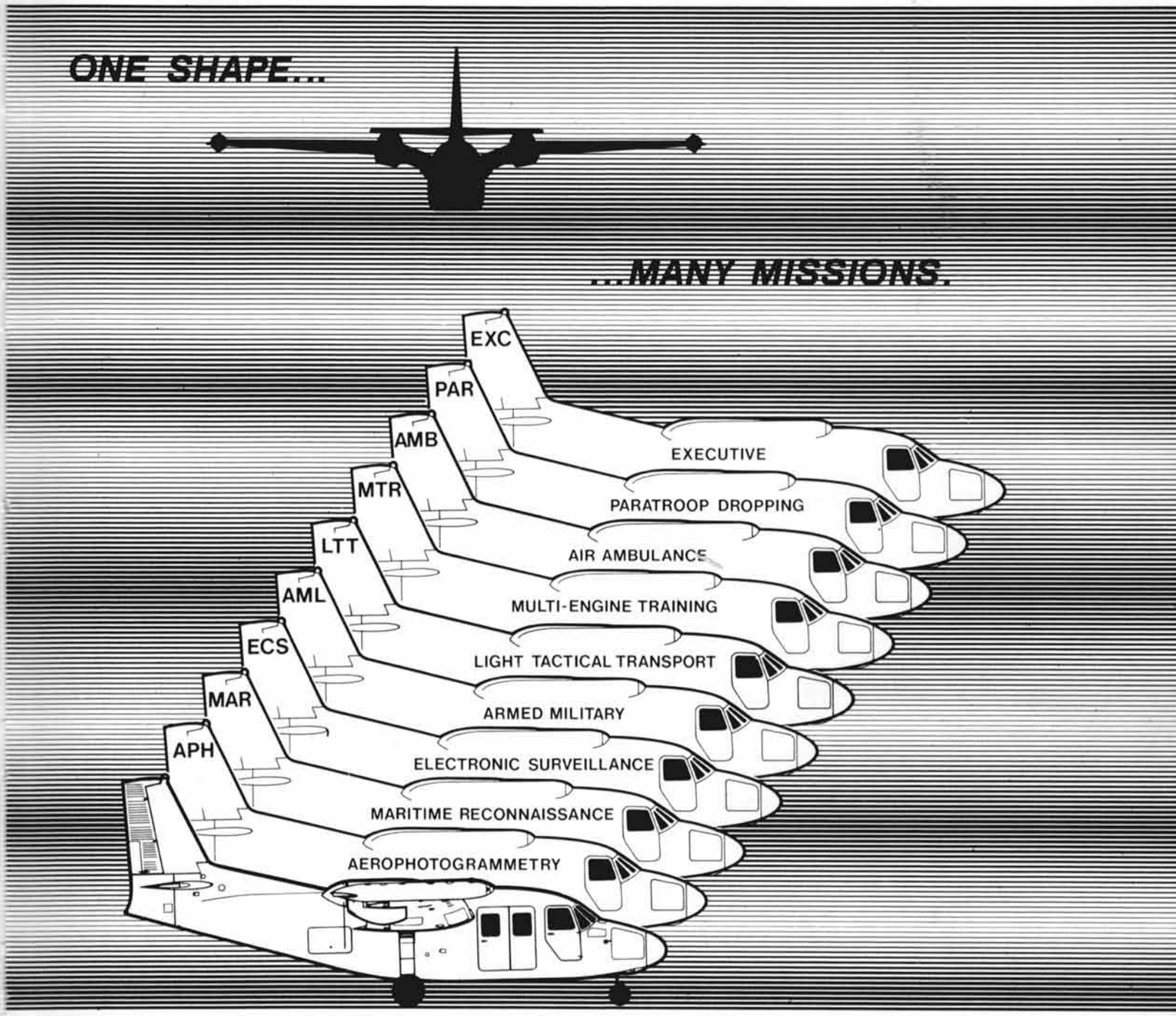

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. . . These and many other features makes of the Piaggio -DL3 a real utility aircraft.

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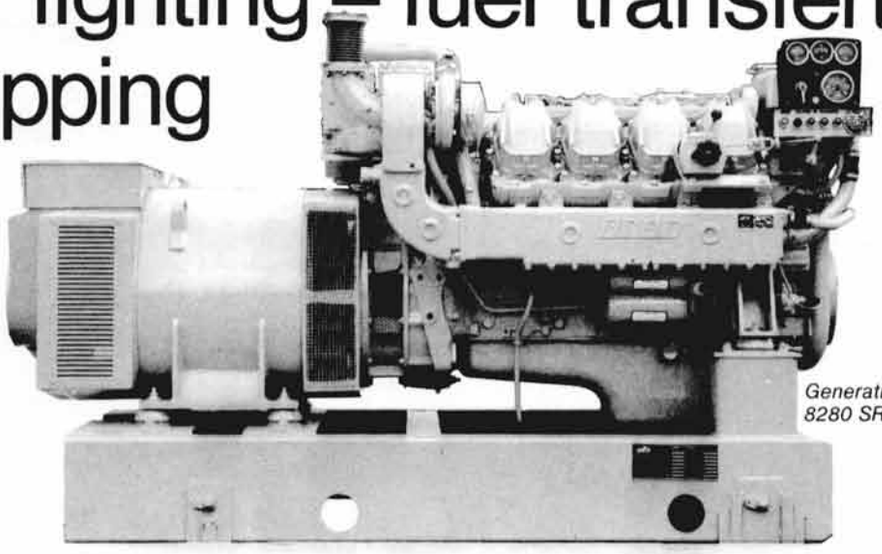

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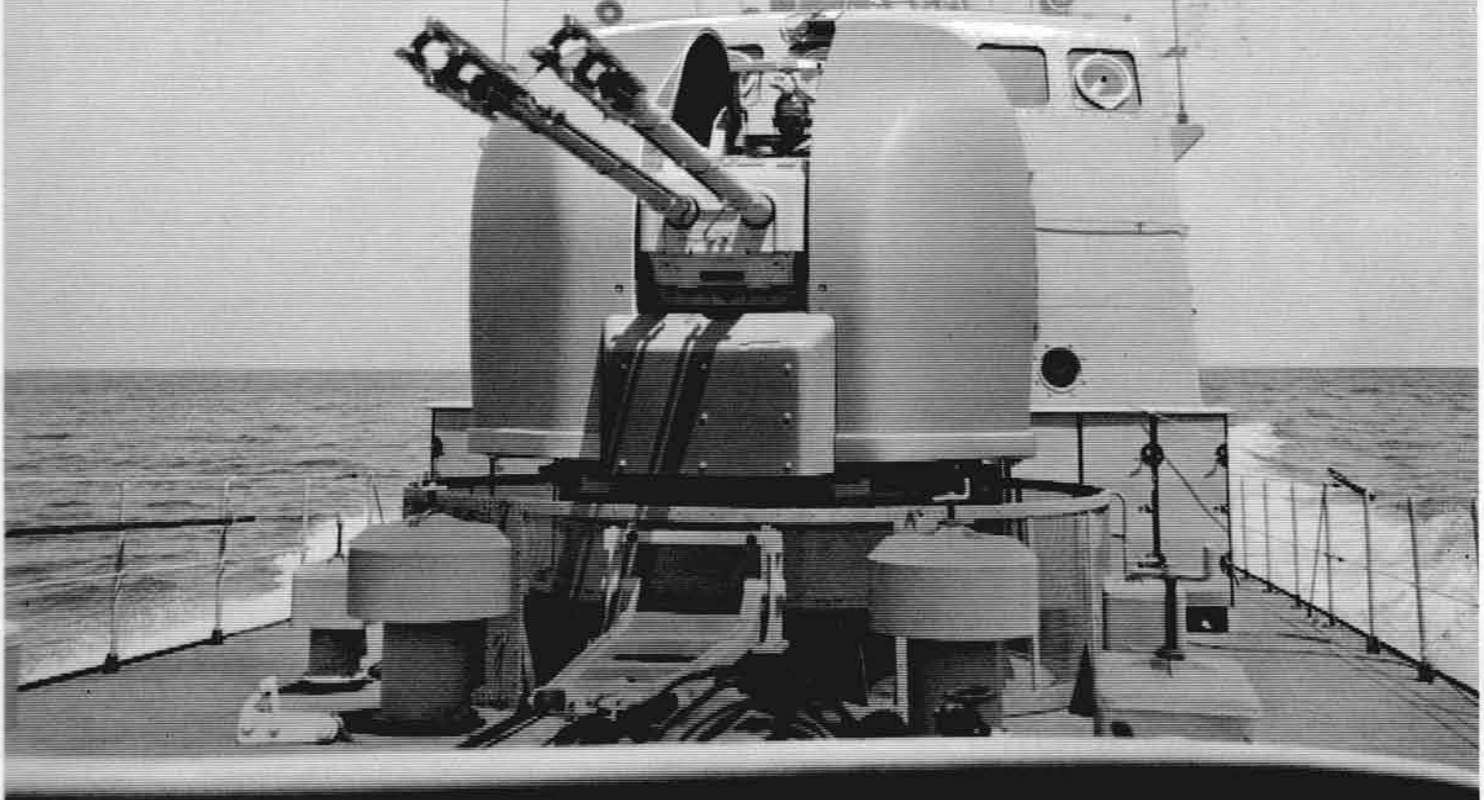

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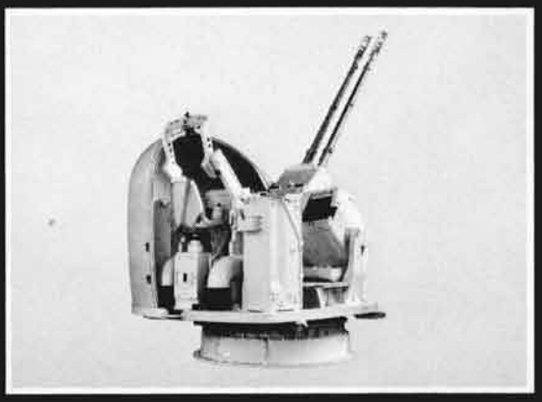

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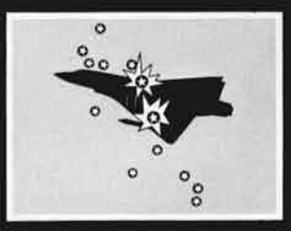

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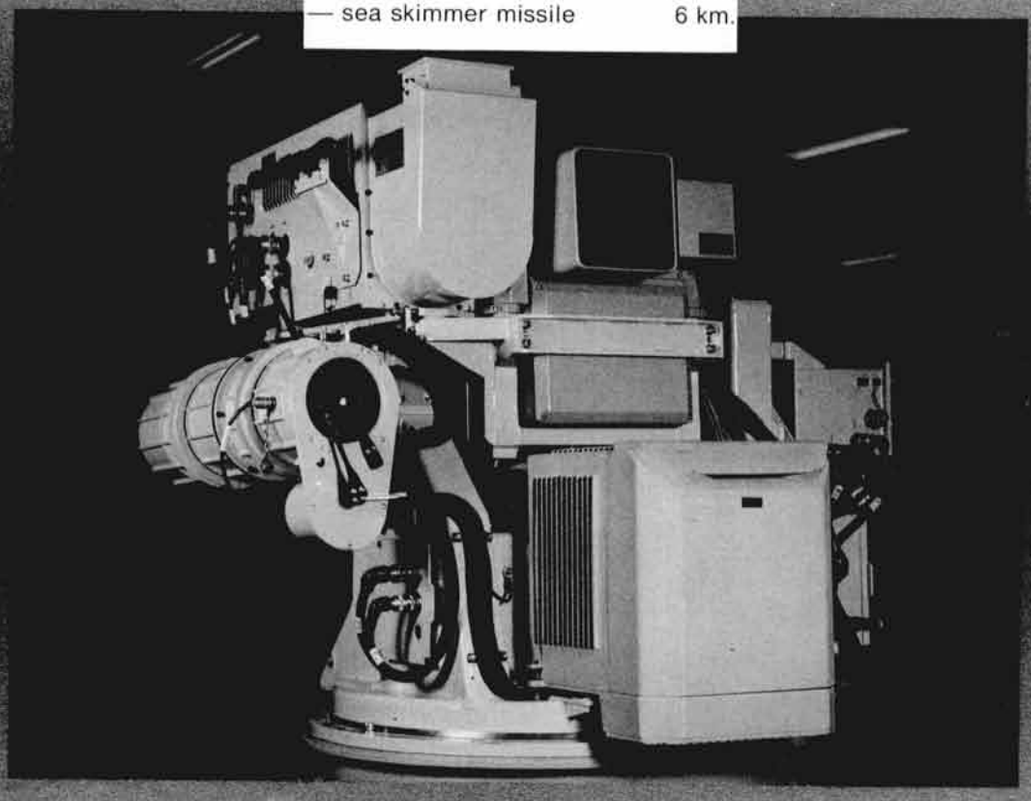

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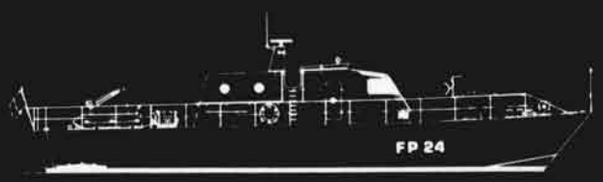

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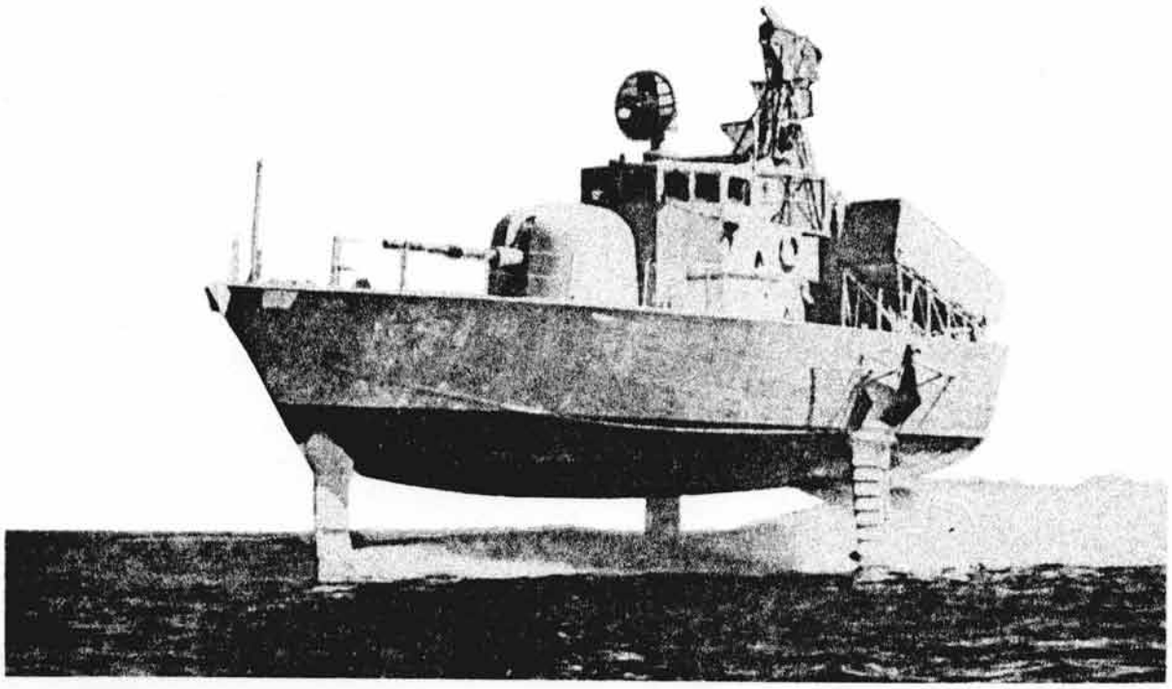

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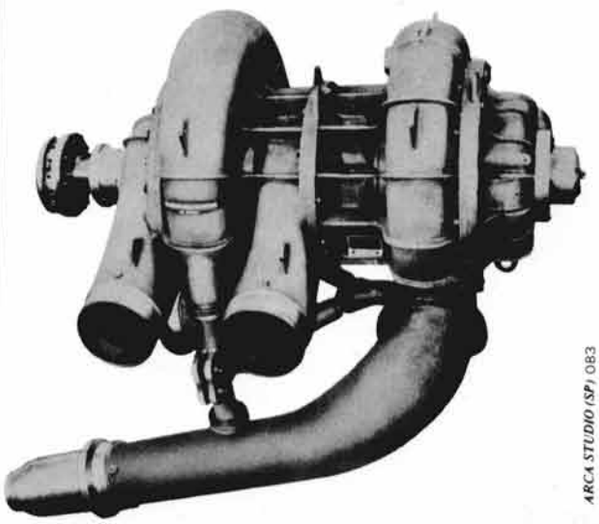

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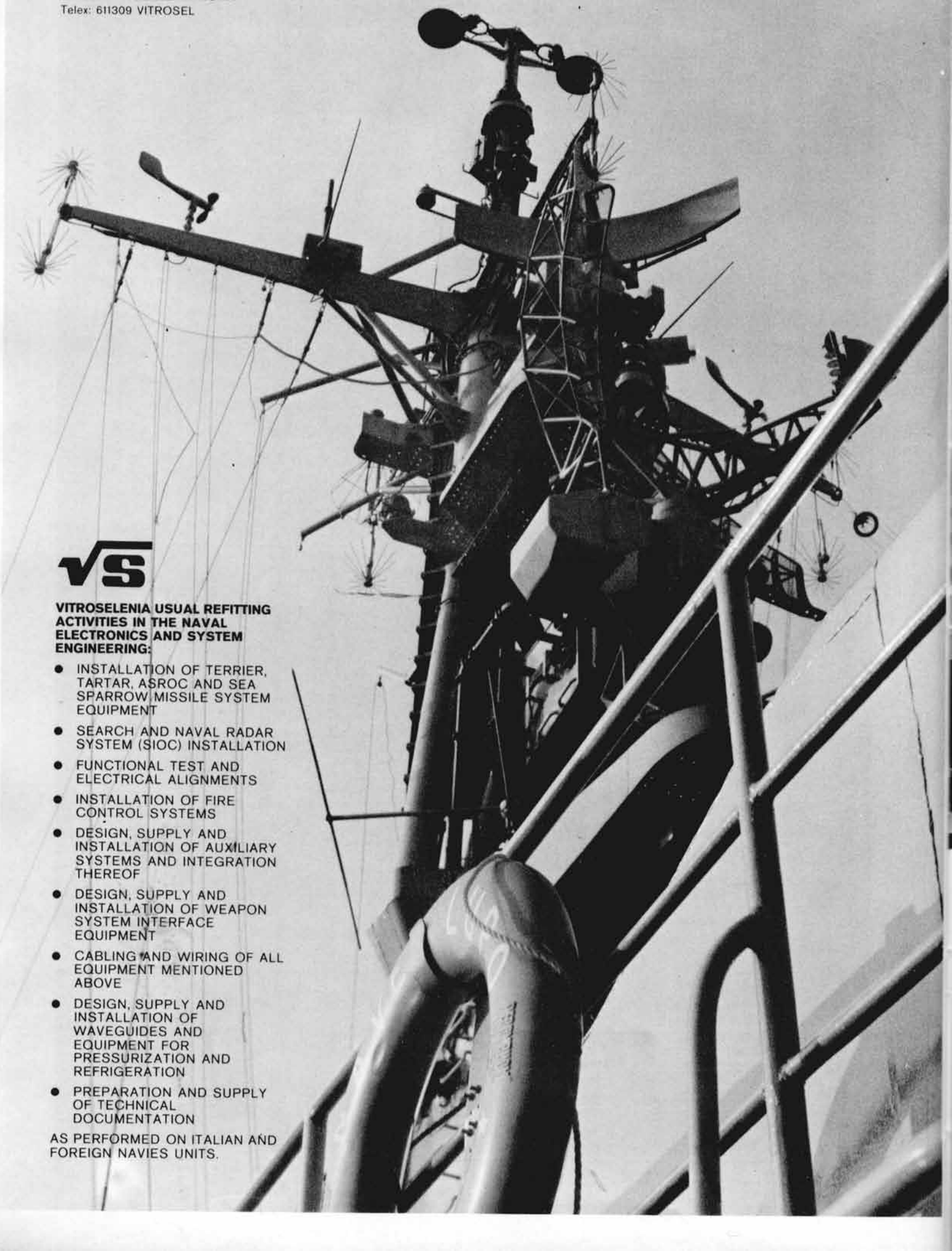

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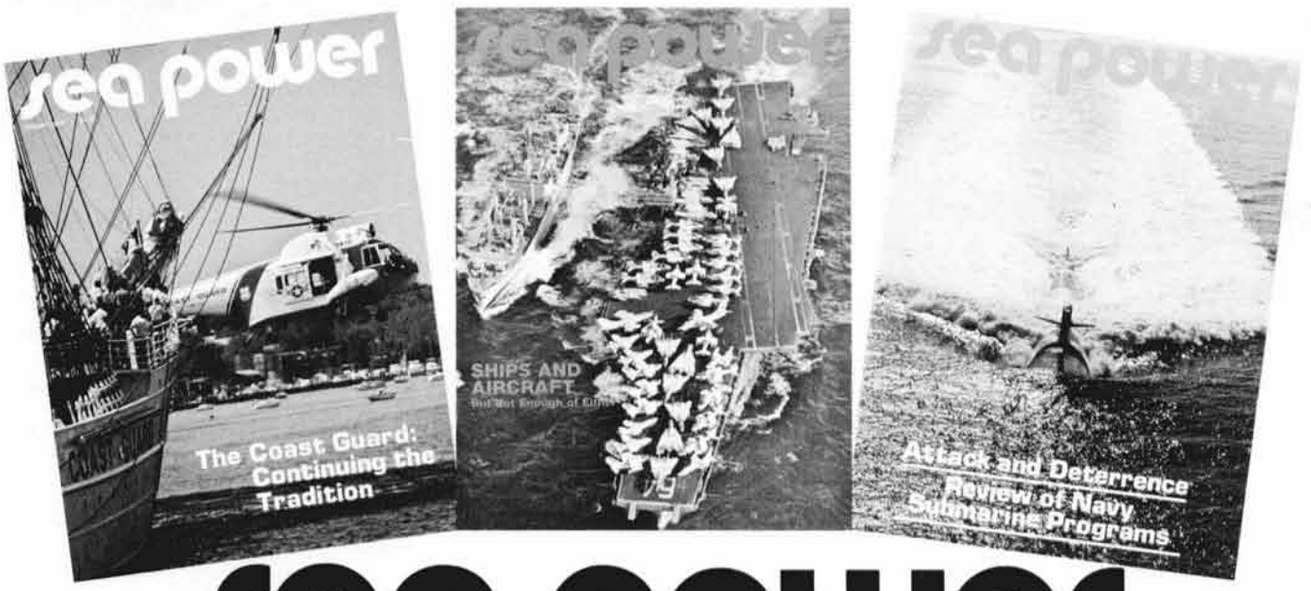

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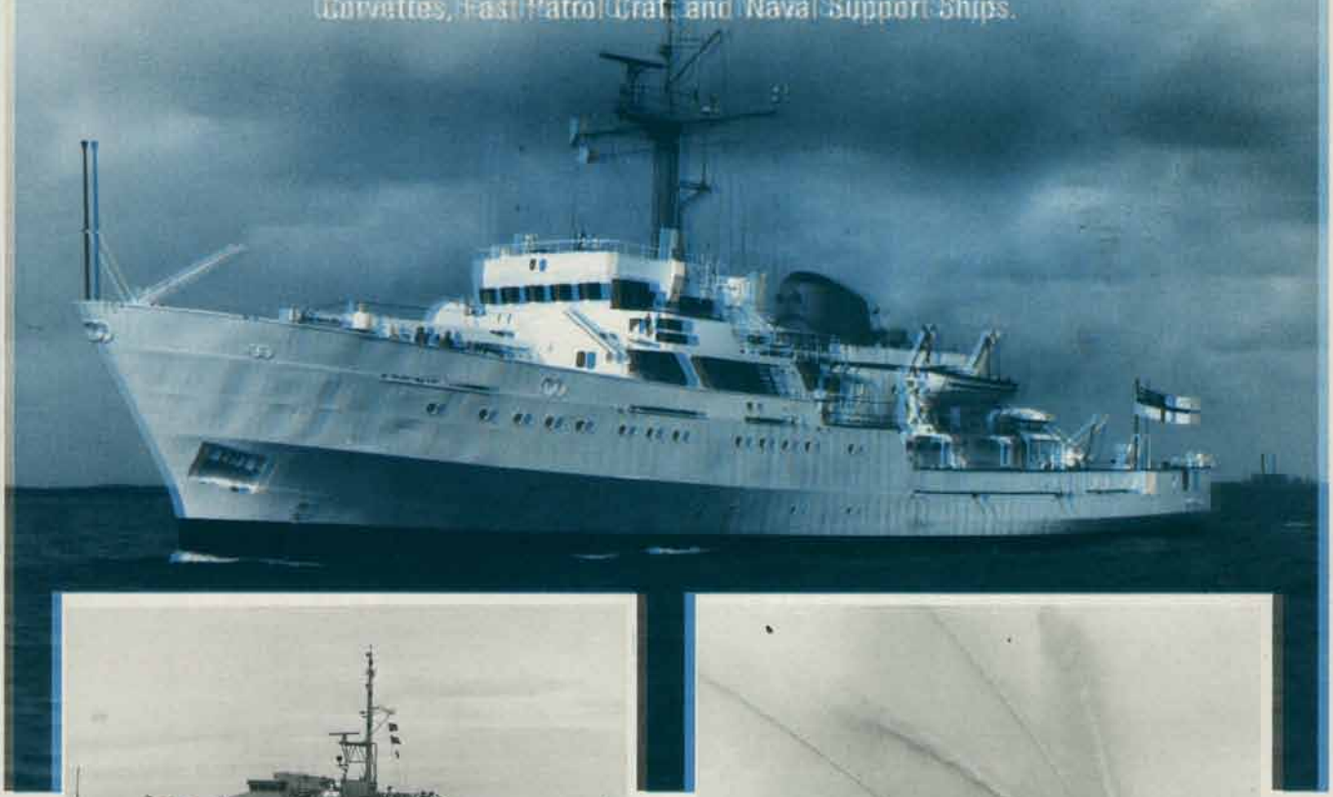

Main illustration top H.M.S. Bulldog constructed in 1970 and refitted in 1980 for the Royal Navy.

Top left H.M.A.S. Fremantle, 42 metre Fast Patrol Craft for the Royal Australian Navy.

Centre left S.N.V. Al Mansur, 37.5 metre Fast Patrol Craft re-armed and refitted for the Sultanate of Oman.

Bottom left H.M.A.V. Arakan, Landing Craft Logistic for the British Ministry of Defence (Army).

Top right One of a number of Fast, Fire Fighting Craft for an Overseas Government.

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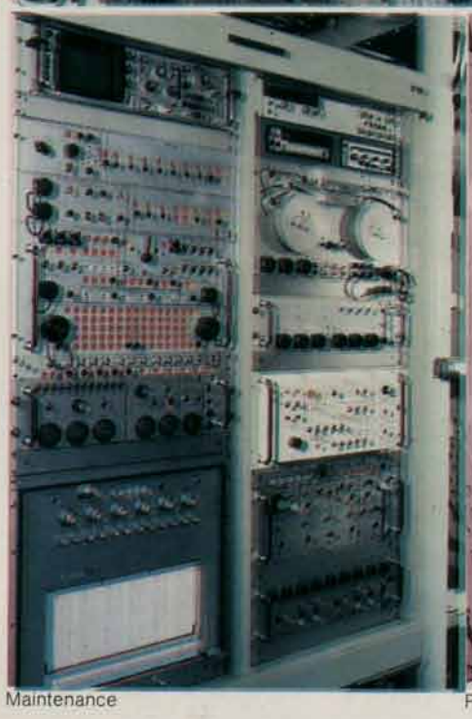

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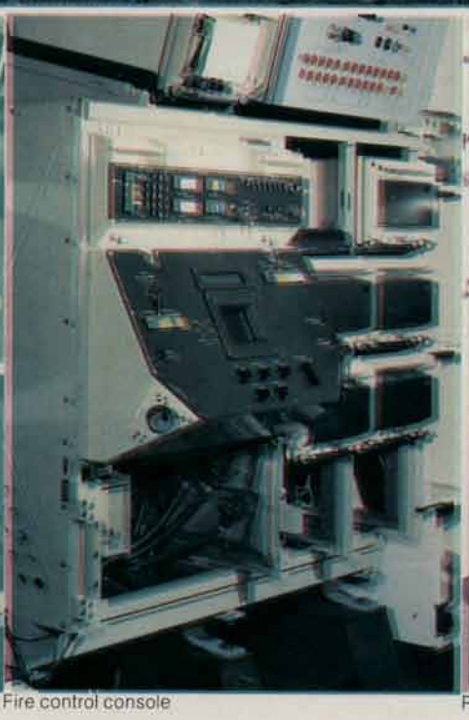
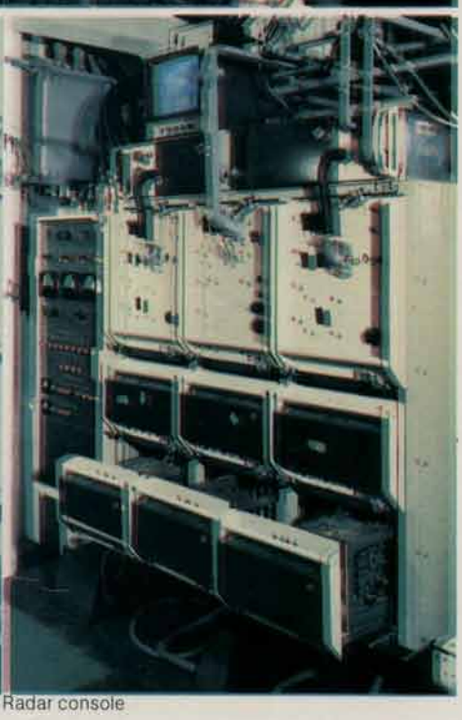


Fire control console



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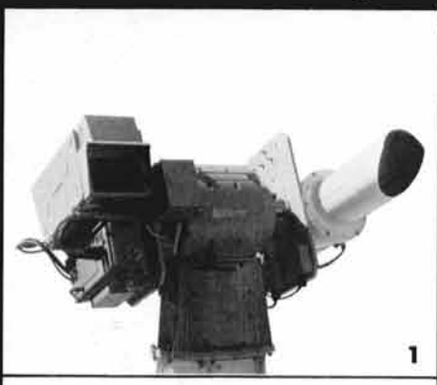
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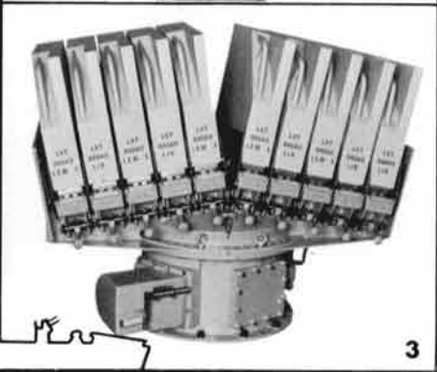
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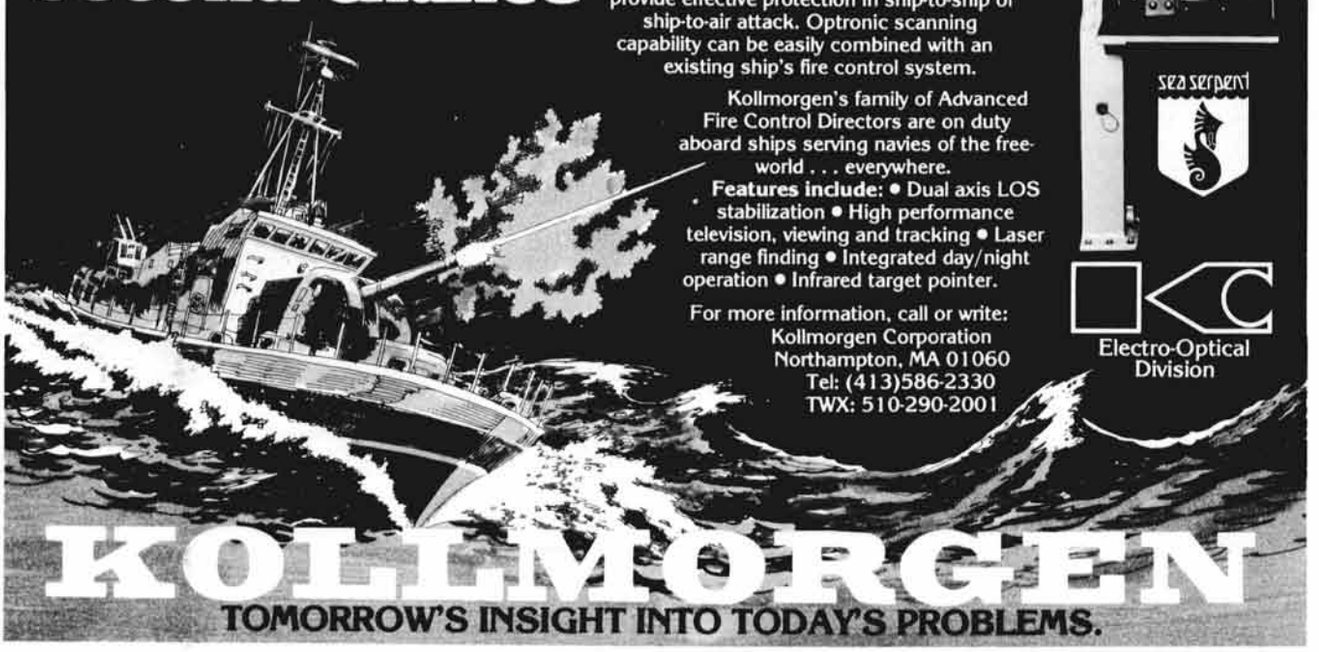

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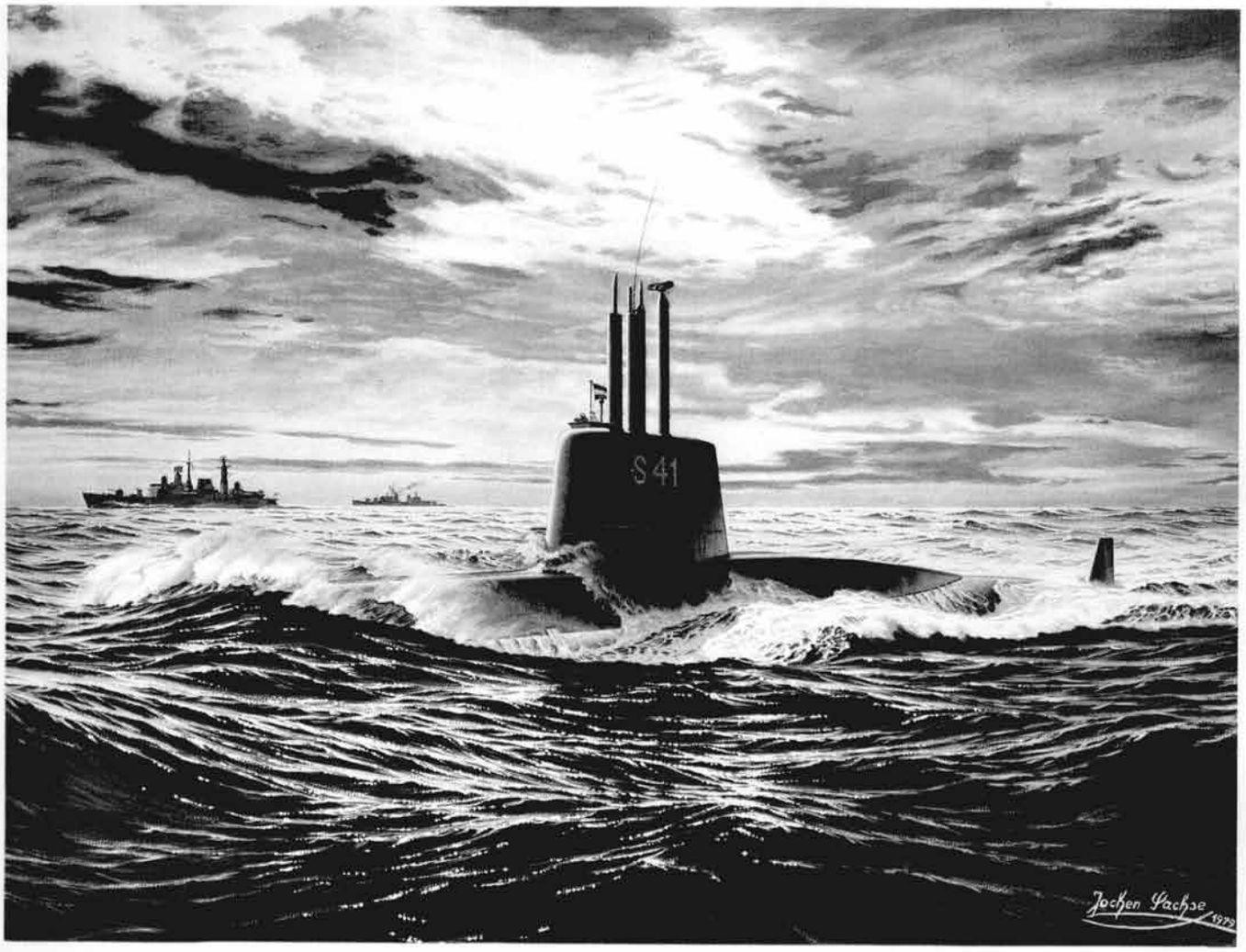

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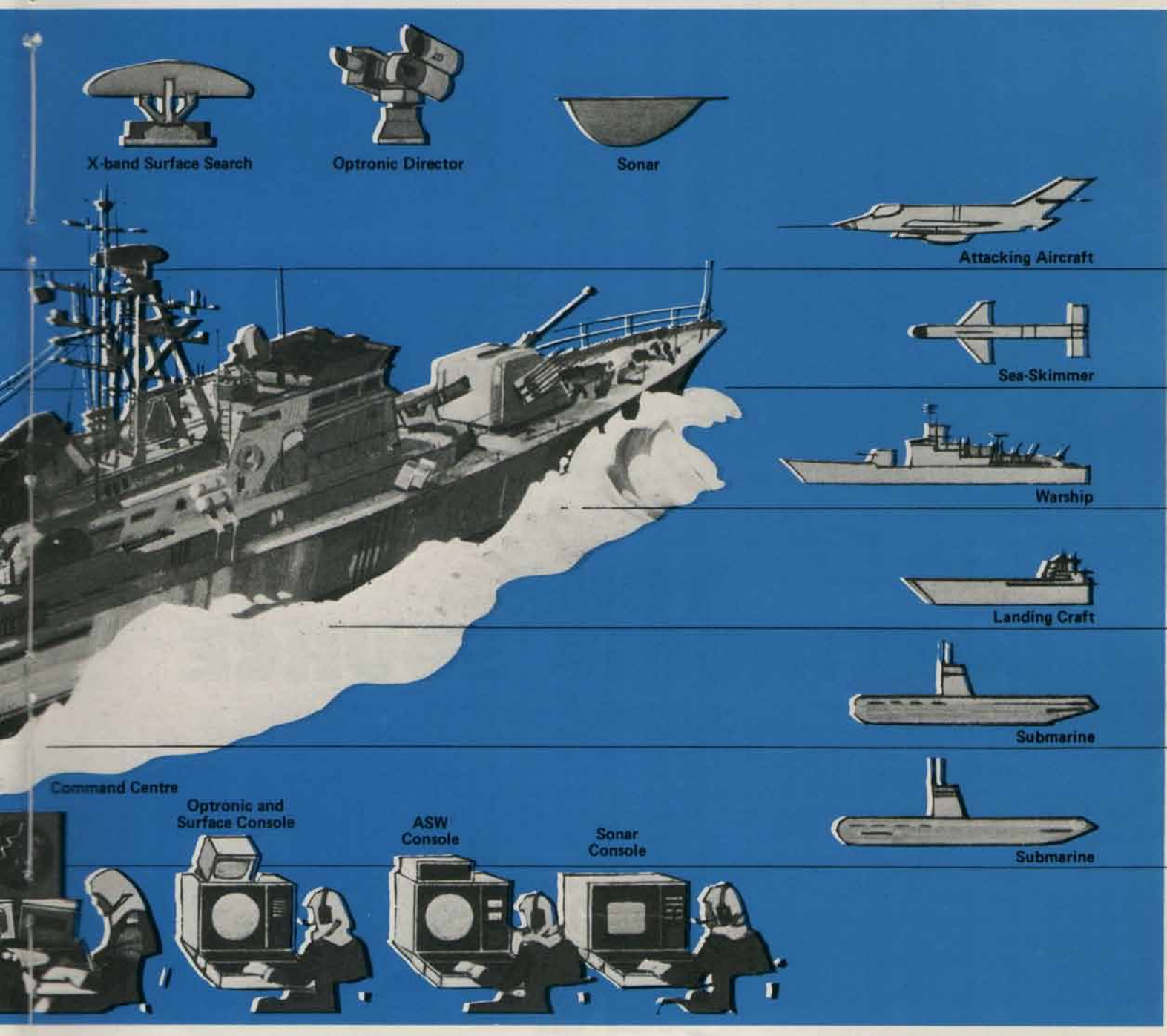

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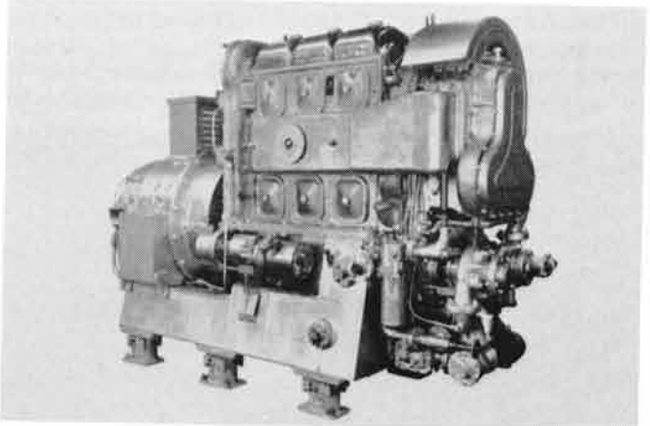

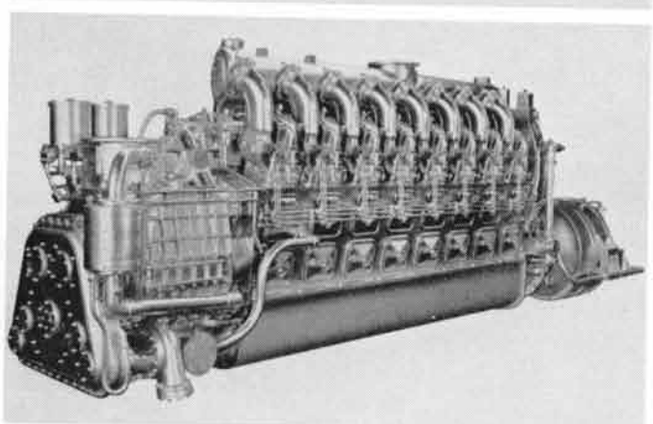

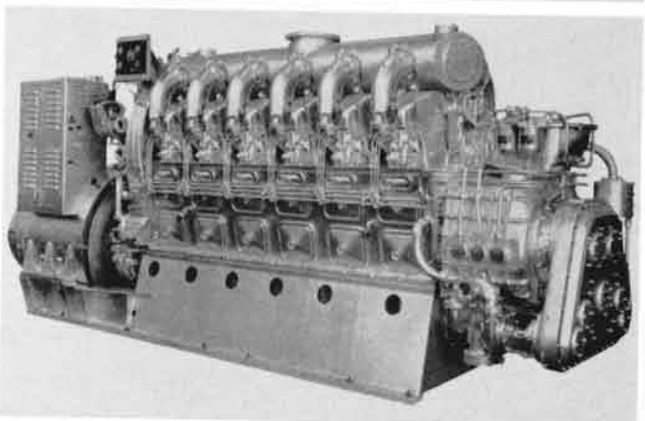

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Data Transmission Systems

A variety of systems have been developed which offer a means of transmitting multiple high speed data over a single highway. The transmission link may be coaxial or fibre optic; fibre optics giving the added advantages of immunity to electromagnetic interference and producing no externally radiated signal. Dependent upon the type of fibre used, transmission links of up to 1 kilometre are available.

Aircraft 8-channel Sonar Receiver System

A Multi-channel Sonar Receiver of modular construction. The system has a high dynamic range and wide bandwidth enabling high speed telemetry data to be received. An antenna pre-amplifier unit ensures a low noise figure.

It provides for simultaneous reception of eight v.h.f. channels, each tunable to any one of 99 channel frequencies, which are selected by serialised digital commands from a processor or control unit. The use of advanced filter technology, extensive hybridisation of r.f. and low frequency circuits and wideband techniques ensure a very high availability.

Outputs are compatible with existing aircraft data processing systems and with advanced systems under development.

The receiver achieves its full r.f. performance when installed at up to 50 m from the pre-amplifier. The interfaces are to specification ARINC 404A. Powered from standard aircraft three-phase supplies, it also provides the d.c. power for the pre-amplifier.

A built-in test signal generator provides extensive check facilities for the receiver and associated processing equipment and it is designed to facilitate servicing by automatic test equipment.

Lightweight 4-channel Sonar Receiver System

A Multi-channel Sonar Receiver developed to meet the requirements of light-weight sonobuoy receiving system.

The receiver plus its pre-amplifier and remote control unit forms a receiving system able to receive four separate channels, each one tunable to any one of 99 sonobuoy channels.

Lever switches allow fully independent selection of sonobuoy r.f. frequency for each of the four signal channels plus test channel.

The system is controlled from a separate panel which also performs the BITE function and indicates the S-level and carrier lock condition for each of the four output channels.

The receiver is self-powered, working from 200 V line-to-line voltage 400 Hz three-phase supply and provides power for the separate pre-amplifier.

Shipborne Sonar Receiver System

The Sonar Type 2007 as supplied to the Royal Navy provides a passive system for detecting surface and underwater targets. The equipment is able to discriminate target signals in a low signal-to-noise environment and gives all round coverage.

McMICHAEL ACOUSTICS develops and manufactures sonar equipment, including passive, scanned and intercept sonar systems. The Division has particular expertise in sonar and radar signal processing, enhancement and display techniques. Sound range equipment, recording equipment for archiving and trials analysis are designed to meet individual customer requirements.

McMICHAEL COMMUNICATIONS develops and manufactures airborne telemetry equipment for sonobuoy systems, aircraft homers, sonics support and training equipment. The Division's capabilities include VLF and LF communications systems for Naval surface vessel and submarine use. Complete VHF and UHF mobile radio systems are supplied including command and control aspects. Advanced satellite communications systems for remote data gathering is in production, as is state-of-the-art Digital Television Signal Processing Equipment.

McMICHAEL CONTROL SYSTEMS develops and manufactures real time digital control systems for autopilots' servo control, fire control systems and training aids. Special purpose data processors and calculators to full military standard are made for ground, airborne and maritime applications.

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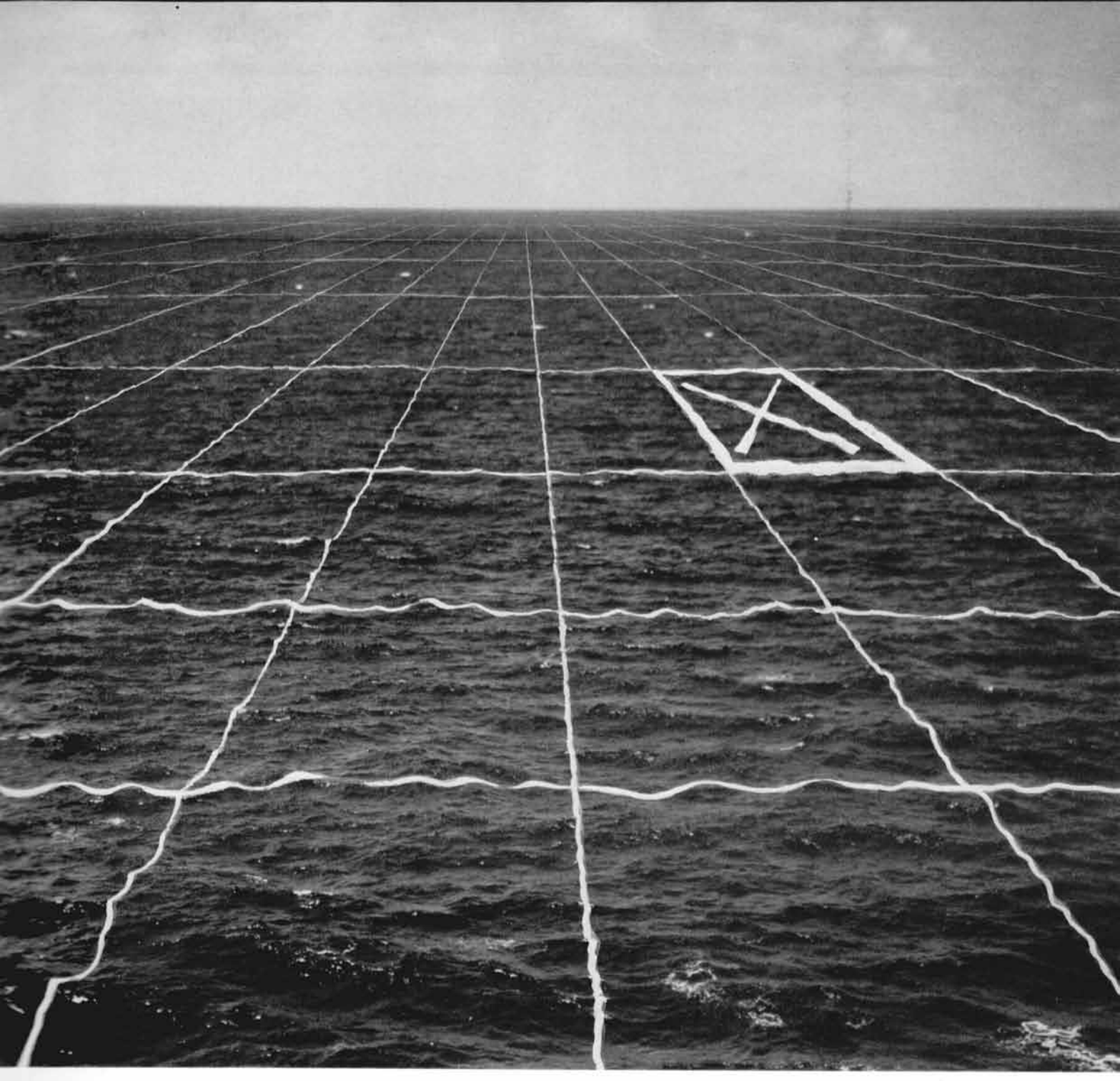

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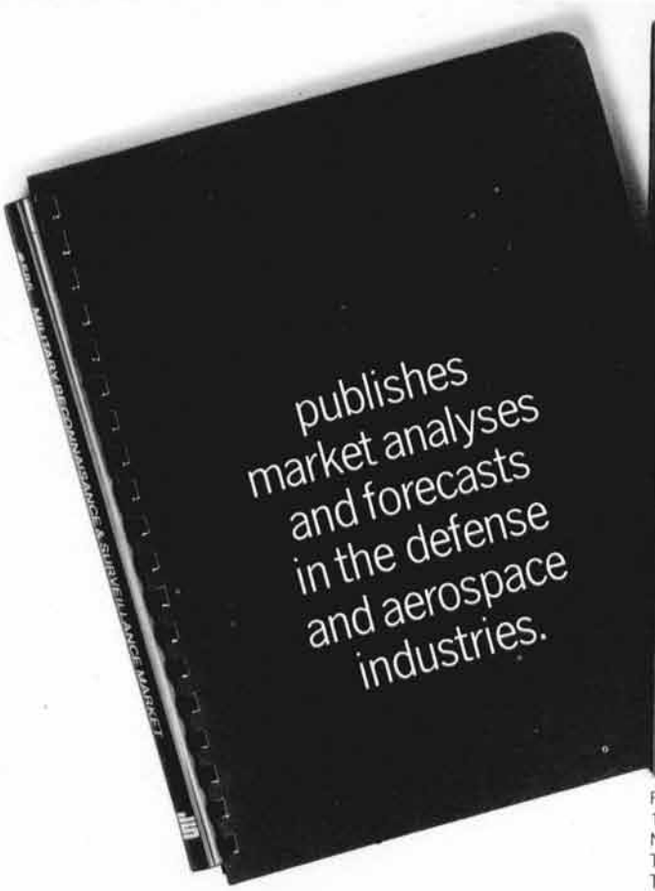

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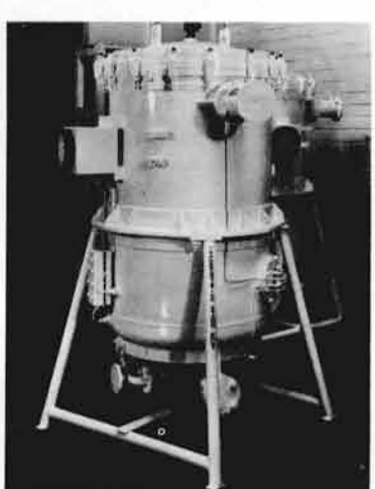
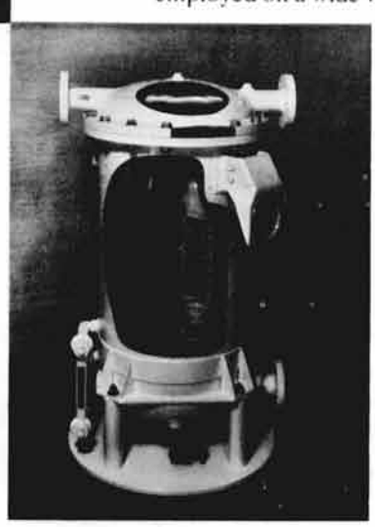


The Cobham Filter Water Separator type VSA 16DC1 PSB as used on H.M.S. Invincible, Thro'deck Cruiser, type 42 Destroyers, type 22 Frigates and Corvettes by the Danish Navy.



The Cobham Filter Water Separator type VSA 4DC1 PSB as used on the MCMV.

Fuel Filtration by COBHAM

Alan Cobham Engineering Limited, a member of the Flight Refuelling Group of Companies, has many years' experience in the design, development and manufacture of a wide range of fuel filtration equipment and liquid level control and instrumentation.

Extensive filtration research and development facilities based at Tarrant Rushton Airfield, have enabled Alan Cobham Engineering to improve and expand its range of fuel filtration equipment and associated products to meet the needs of the British Ministry of Defence (Navy), ship builders and the navies of other countries.

Our complete range of products are quality tested at all stages of manufacture by our Inspection Department, which is manned and equipped to work to the conditions laid down by Def Stan 05-24 Registration No 17285-1-01.

Cobham filter water separator vessels are approved to the requirements of MOD (N) NSSI shock loading and vibration standards and the versatility of the range enables these vessels to be employed on a wide variety of naval applications.

Cobham filter water separator vessels are currently specified for installation into the Thro'deck Cruiser H.M.S. Invincible, type 42 Destroyers, type 22 Frigates, 'Brecon' class MCMV's and F.P.B.'s.

Cobham equipment has also been specified by the Danish Navy for use on Corvettes currently under construction and is also under consideration by navies of other countries.

The long life and reliability associated with the Cobham range of aviation fuel filters has been designed into the Cobham range of filtration equipment for the world's navies after extensive development in conjunction with AOL Cobham and DG Ships, Bath. Consequently, these units provide an economical and reliable filtration system.

Cobham Engineers will be pleased to discuss any questions relating to the range outlined above, in detail.

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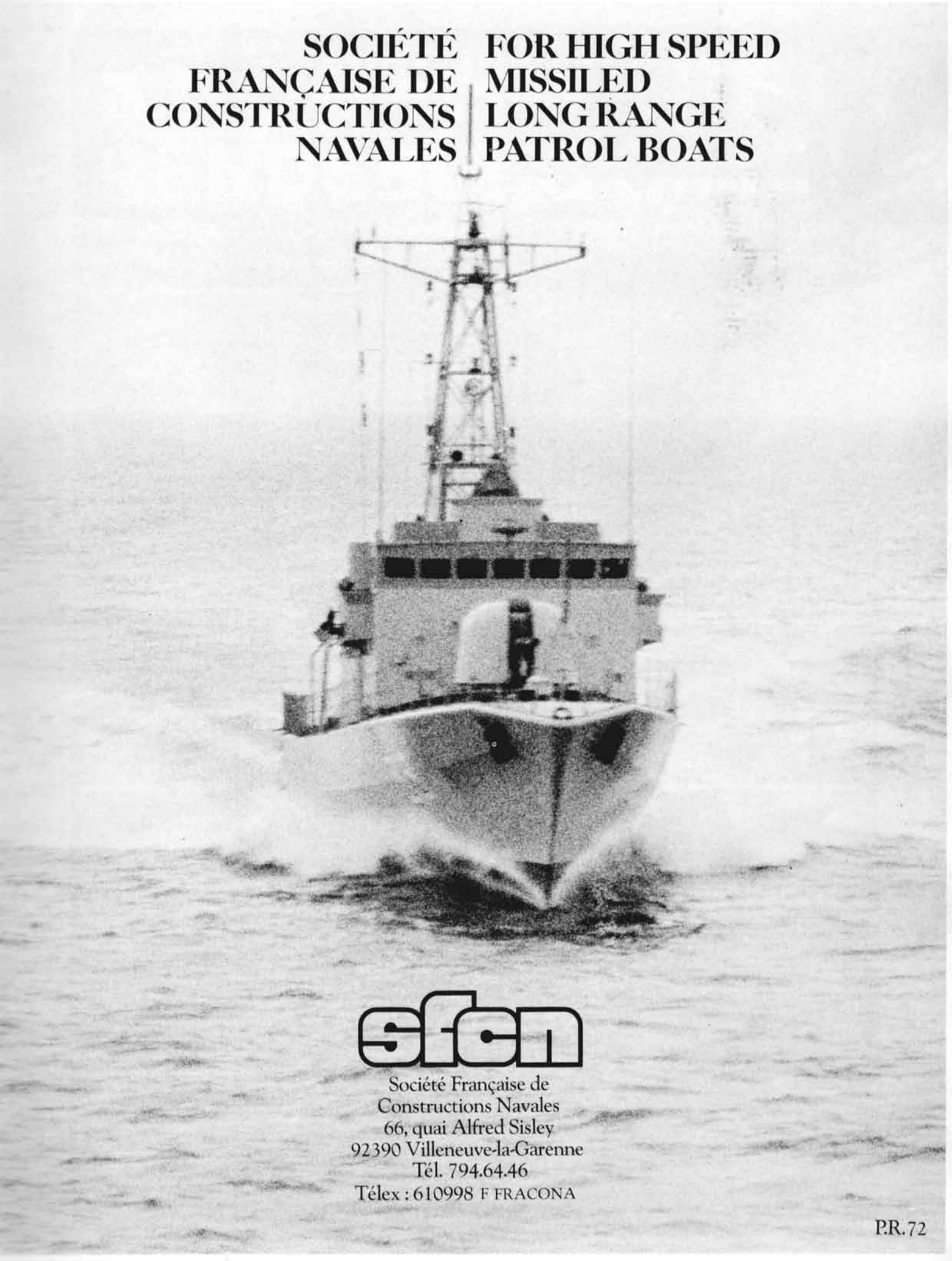

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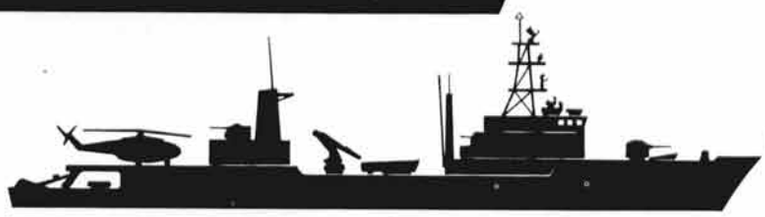

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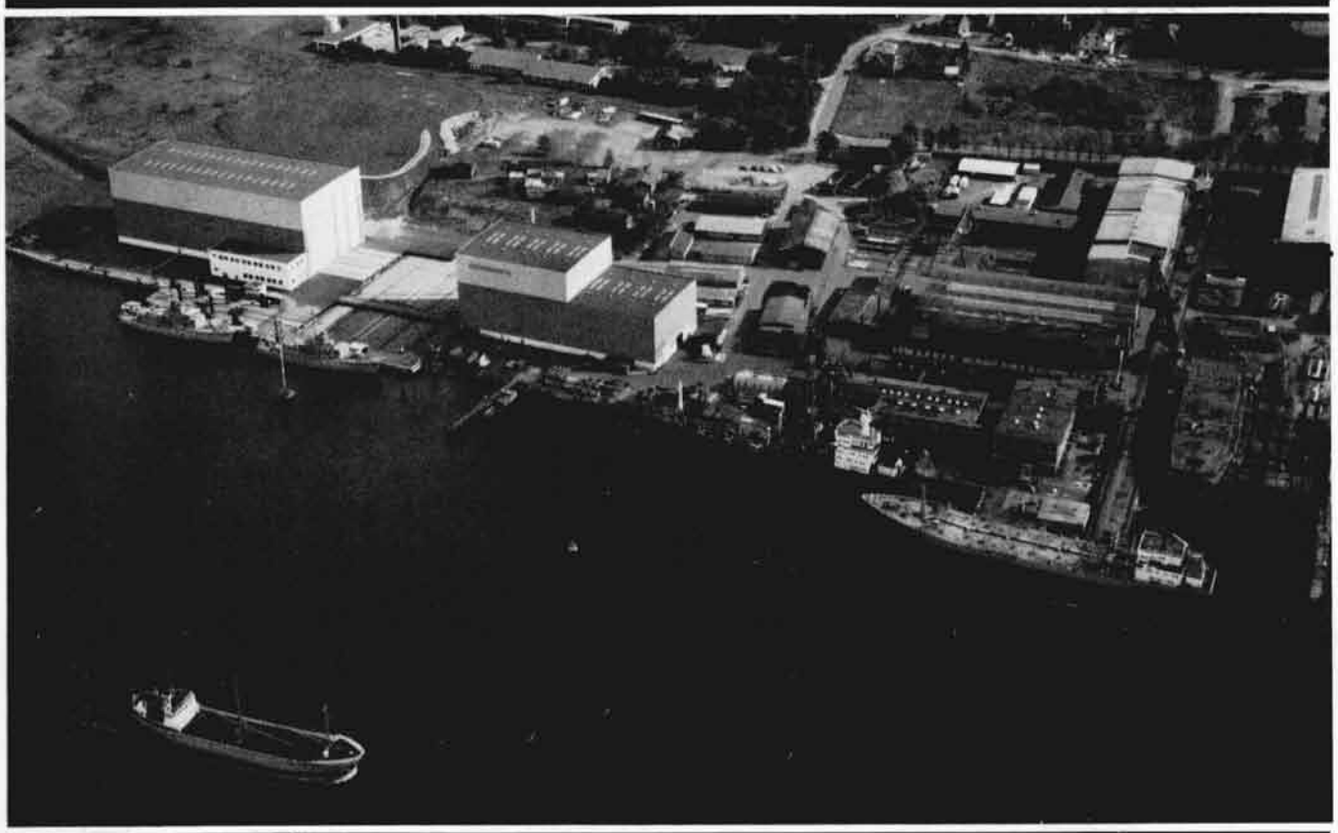

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- **high power/weight ratios,**
- **high reliability,**
- **low fuel consumption at all engine speeds,**
- **easy, infrequent maintenance,**
- **great robustness and resistance to shock resulting from underwater explosions,**
- **low smoke index.**

1 000 to 30 000 HP

This wide range of power ratings covers a comprehensive range of military applications in terms of vessel displacement and function:

- conventional and nuclear submarines,
- high-speed ships, gunboats, corvettes, ocean patrol vessels,
- logicistical support and supply ships, tugs, etc...

Engines for navy applications are the subject of constant research work by the project engineering and consultancy departments of Alsthom Atlantique. Their constant objective is to increase the power/weight ratio to reduce the overall dimensions and to increase the efficiency and the reliability.

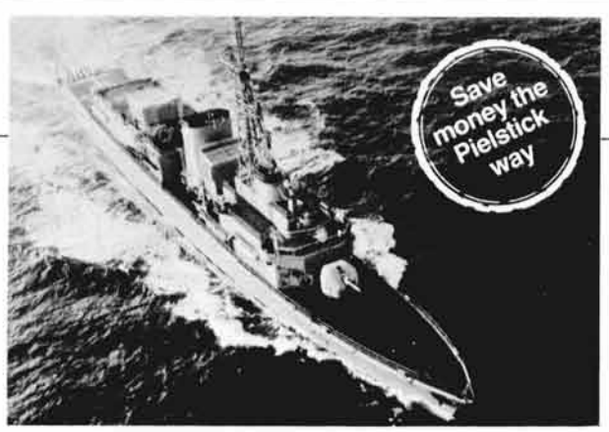
Low power to weight ratio

The PA4 V 200 VGDS (8, 12, 16 or 20 cylinders in V) is a high-performance engine specially developed for navy applications, offering a power/weight ratio of 1.9 kg/hp (350 hp/m^3) at peak power output. It is a high-speed engine (1 500 rpm) with a 200 mm bore. Its maximum continuous power rating is 250 hp/cyl. These exceptional performance figures are achieved through the use of:

- a variable geometry combustion chamber,
- a two-stage turbocharging.

Designed for long run at very low load

This engine offers, thanks to nodular cast iron piston, an exceptional capability to run at low load (7 hp/cyl). It is exceptionally silent due to the use of flexible engine supports, and the exhaust discharges under the waterline, for operation at maximum periscope depth in the case of submarines.



Increased power with no increase in engine capacity

Since the introduction of the first S.E.M.T.-Pielstick type PA high-speed engine, the nominal per cylinder power rating has increased from 62 to 250 hp (PA4 V 200 VGDS).

The type PA6 engines was originally marketed at 350 hp/cyl. Today the low compression ratio technique results in a maximum continuous power rating of 550 hp/cyl, soon to be increased to 600 hp/cyl (540 hp/m^3), with no significant increase in the levels of mechanical and thermal stresses.

The medium-speed PC2-6 engine uses the modular pulse converter (MPC) system to achieve a power rating of 750 hp/cyl with the same capacity as the original version of the PC2 engine.

The PC4-2 engine power rating has been increased from 1 500 to 1 650 hp/cyl.

S.E.M.T.-Pielstick engines have always been able to meet the specialist requirements of navy applications.

Confidence in S.E.M.T.-Pielstick engines has been another factor in the company's success in this field.

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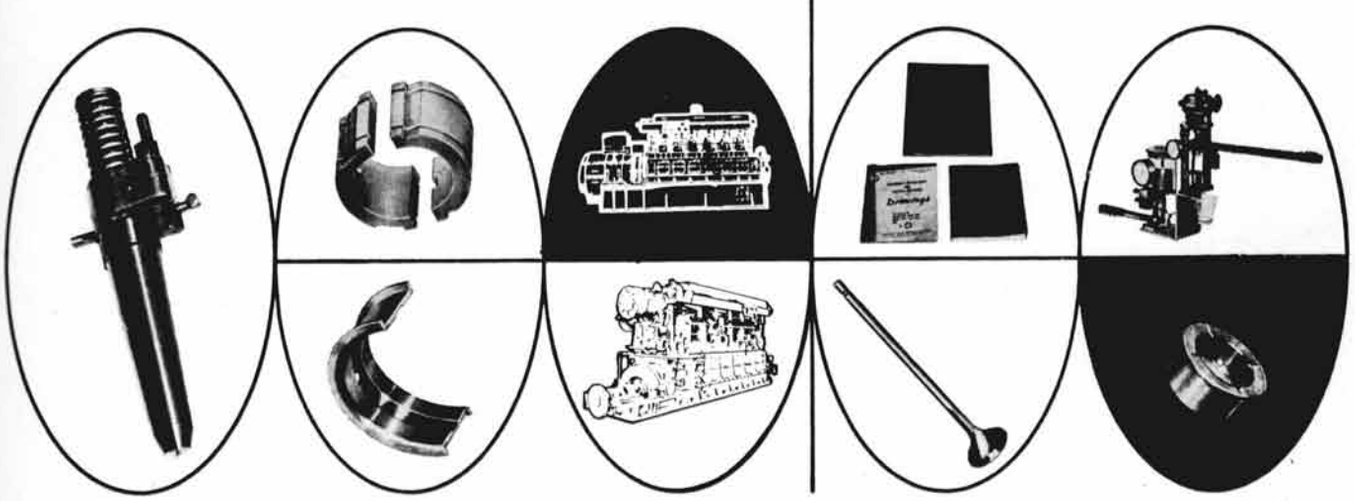

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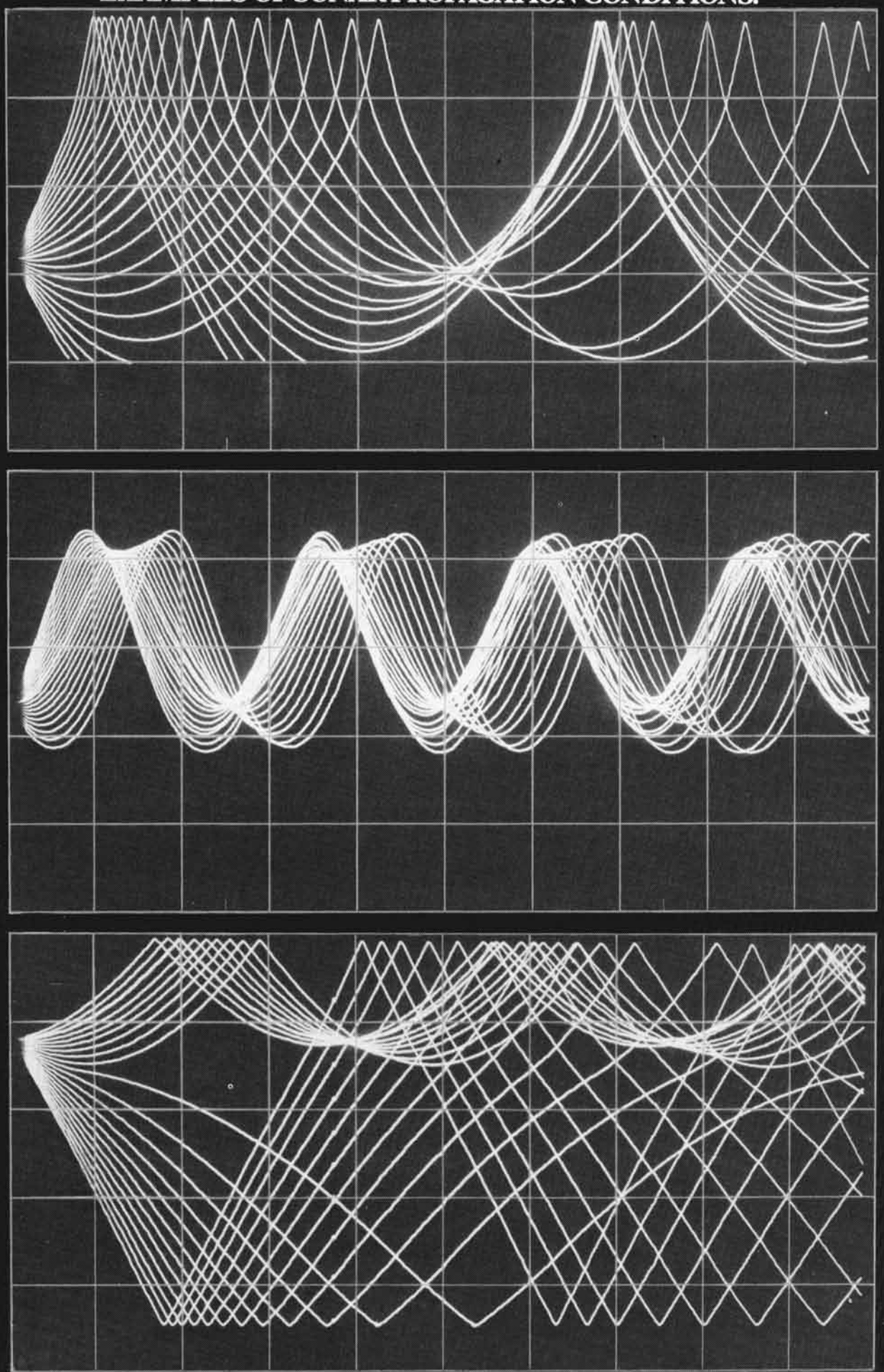


Immediate visualisation of a wide range of sonar propagation conditions is obtainable from Signaal's SPI-04

SIGNAAL

Signaal's auxiliary systems for sonar complete the subsurface picture.

Bright pictures generate bright ideas.

In general, today's sonar equipment is very sophisticated. But the ocean remains a complex medium, making it difficult to obtain a bright picture of the subsurface situation. Even a skilled operator needs more than his sonar to get the complete in-

Signaal's PHS-32, a sophisticated sonar

formation. And that is what Signaal's auxiliary systems offer.

Quality

The XSV-01 expendable sound velocimeter probe provides reliable sound velocity

On-board processor and recorder for XSV-01 expendable sound velocimeter probe

data of the medium. This data includes the influence of salinity

SPI-04 Sound Ray Path Analyser

and pressure, and therefore is of a much higher quality than other bathythermograph data.

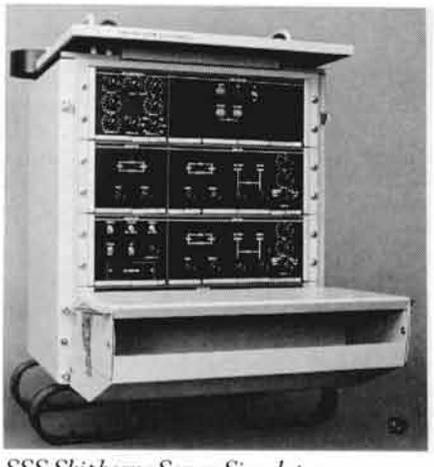
The Sound Ray Path Analyser SPI-04 uses the XSV-data to provide a prediction of the sound path of sonar transmissions. Its immediate visualisation of propagation conditons is extremely useful to both operators and decision makers.

Alertness

The use of a Shipborne Sonar Simulator (SSS) will help to raise the level of operational alertness. The advanced electronic signal generation of this trainer allows signal injection at the front end (transducer) of the sonar. Which makes it also possible to mix live sonar signals with simulated target echoes and noise.

Flexibility

All SPI-04 and SSS equipment uses digital microprocessors. That explains why it is so flexible and reliable. And why it adapts so easily to changing situations. The flexibility of the SSS allows co-operation with various sonar types with different frequencies and array configurations.



SSS Shipborne Sonar Simulator

Bright ideas generate a bright picture

Signaal's auxiliary systems are the result of long experience and a series of bright ideas. They help to make better evaluations. And offer realistic training facilities. They are developed and produced by Van der Heem Electronics, member of the Signaal corporation, and present the bright kind of picture that generates bright decisions.

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FOREWORD

The publication of Jane's Fighting Ships is in its 85th year, bridging a period since 1898 which has seen more change in naval design and technology, in tactics and strategic considerations, than any other similar time span in recorded history. Not only has the advance been considerable but it has taken place at an ever-increasing tempo.

In the early 1900s few would acknowledge the threat posed by the submarine and, 20 years later, a similar attitude to the aeroplane was evident. Conservatism in naval thinking has been the rule for many years, encouraged by the length of time required to plan and build a ship as well as that ship's subsequent longevity. This approach has, on many occasions, resulted in a failure to capitalise on advancing technical developments. The design and fitting out of new vessels has lagged behind available innovations and improvements, to the general detriment of the efficiency of the fleet concerned as well as the financial resources required later to provide modern equipment.

It can be argued that this has not been true in all cases: in peacetime the German navy of the 1930s and the Soviet navy since the 1950s made remarkable advances. During war-time the navies of the Western Allies made improvements between 1939 and 1945 which would have been unthinkable in their scope and the rapidity of their accomplishment in the pre-war years. All these cases have one thing in common: the prevailing financial situation in the country concerned was geared to military expansion. Today this is very far from the case in most non-Communist countries. The following table, which can be no more than approximate, is prepared from data obtained from the World Bank, the *Financial Times* of London, the *Economist* magazine and the British Statement on the Defence Estimates 1981.

Country	*Percentage of GDP for defence*	*Military budget $ million*	*Percentage of per capita income for defence*
USSR	12-14	180 000	34
USA	5.5	140 500	10.8
UK	5.2	26 300	15.6
France	4	26 200	10.9
West Germany	3.3	26 700	8

These figures, based on total populations, show a great weight being borne by the individual citizen. What they do not show is the breakdown of the financial resources available for defence between the various requirements of the armed services. In the USSR generally about 40 per cent of the budget is expended on new weapons systems (ships, aircraft, tanks, missiles etc) and 20 per cent on research and development. Of the naval budget itself, ignoring research and development, 53 per cent is allocated for ships and weapons, 40 per cent for their operation and maintenance and 7 per cent for the personnel. This last figure is not surprising when one considers that the most senior conscript rating receives only 30 roubles a month which, at the official rate, is worth about £215 a year and, at the open market rate, about £40. As 70 per cent of the Soviet navy personnel is conscripted and shares only 7 per cent of the total payment while the officers' corps, which comprises 20 per cent of the total, receives 70 per cent of the booty there is clearly room for extra spending on ships and equipment. It matters not that socialist equality requires a Soviet admiral to receive a hundred times more than an AB as compared with a British admiral's pay being only six times greater than his most junior rating: the savings are made on the three year conscripts. A production rate similar to or greater than that of 1980 when the Soviet yards completed five major surface ships, nine nuclear submarines and four non-nuclear submarines is, therefore, quite clearly possible over the coming years.

Perhaps the Soviet citizen is getting a fair return for providing over a third of his exiguous income for the Minister of Defence. But is the Western European or American citizen receiving a similarly satisfactory return for his contribution?

For this publication it is most convenient to use the experience of the Royal Navy as an example of the problems being faced by both Naval Staffs and ship designers. Firstly comes the matter of cost and here considerable approximations must be accepted. The 'cost' of a ship is very rarely the same as the 'price' paid by the purchaser to the builder. In the case of a major warship the purchaser usually provides a considerable proportion of the equipment, machinery and weapon's systems from his own resources or from sub-contractors. Thus it is misleading to compare the apparent cost of a destroyer with that of an auxiliary ship. However some comparison may be made between ships of a similar type over the years: the most genuinely comparable are the frigates as these have developed and evolved steadily over the last 30 years. From the 'Whitby' class of about 1950 'costs' rose 65 per cent to the 'Tribal' class of the early 1960s. There was a further 35 per cent rise for the last of the slightly larger 'Leander' class ships completed in the early 1970s and, when the last of the 'Amazon' class was commissioned in 1978, her cost was four times greater than the last 'Leander'. Finally the 'Broadsword' class, some 800 tons larger at 4000 tons, is now costing over five times more than the last of the 'Amazons'. Thus, while the size of frigates has increased from 2500 to 4000 tons in 30 years, their cost is now 40 times greater. What is even more discouraging is that almost half this increase has taken place in the last ten years, giving a graph which is rapidly reaching the perpendicular.

Treasury reaction to any Defence spending has traditionally been defensive in itself and arbitrary instructions from the financiers frequently take no account of realities or of technical matters of which they are ignorant. In the previous financial year the Ministry of Defence was instructed to assume an inflation rate of 14 per cent when the actual rate applying to warship building was nearer 32 per cent. That this figure had been reached was partly the fault of the Ministry itself and the lack of accountability which is built into its structure. However, the results, the moratorium placed on capital investment until November 1980 and the subsequent 'stringent discipline' are having serious consequences on the training of the fleet and could well affect recruiting. The fact that only one major warship, a nuclear submarine, has been ordered in the two years in which the present British government has been in power must be followed by serious repercussions in the next ten years: it is impossible to halt what is necessarily a long-term rolling programme without causing major disruption in the future. In a small way this situation has now afflicted the navy of Canada. As a result of the need for frigate replacements being shelved for many years a bill of $214 million for

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repairs and modernisation will be presented over the next five years with a further $2300 million to be found subsequently for new construction. A considerable proportion of these sums might well have been saved by timely and appropriate action ten years ago.

The 1981 British Statement on the Defence Estimates acknowledges that part of the solution lies in the hands of the Ministry of Defence itself. Already considerable reductions have taken place in the civilian staff of the Ministry, a staff which comprises about one third of the Home Civil Service. It is often pointed out that, in many areas, the use of civilian employees releases uniformed personnel. Present events have suggested that, at times, the interests of trade union policy take precedence over the defence of the realm.

Such problems are comparatively minor, however, when compared with the ponderous processes which eventually lead to the production of equipment for the armed forces. After the initial single service consideration of a project, which may take up to a year, the idea is passed into the arena of joint service discussion. From this point to the delivery of the finished article to the user there are at least 14 more stages to be surmounted, a stately progress which could be as short as five years for a comparatively minor item. A major project, particularly one liable to engender inter-service rivalry, could linger on the line for eight or nine years.

It is argued by the advocates of this system that it prevents hasty decisions which may be regretted later. What it does ensure is that the Commander who originally conceived the need may be present as a Rear-Admiral at the unveiling of the finished product which, in this time of accelerating technology, may well be obsolescent if not obsolete. The replacement for this new but out-dated product must then make its way through the labyrinth of at least ten widely spaced high-grade committees plus other essential stages: 'Feasibility Study', 'Project Definition Study', 'Development Proposals'. It is interesting to speculate on the final outcome of the Second World War if this process had been applied to the Double L Sweep (six weeks to develop to production), the Cavity Magnetron (16 months), Type 271 Anti-U boat radar (nine months) or the Sonobuoy (five months).

The response to this statement is probably 'There was unlimited money available.' There wasn't. What was available was a sense of urgency shared by those involved who either ignored or circumvented restrictive regulations and practices in their determination to be ahead of the enemy, to force him to be reactive to their efforts. Ideas, ingenuity, innovation were the foundations of success and these were directed by a clear appreciation of the primary need, the essential role uncluttered by additions, hesitations and changes of course.

The spectacle of the unfortunate infantry soldier who has to operate away from his transport is a salutary lesson to all planners. Designed to fight the enemy he is girt about with spare ammunition, water, automatic weapons, digging equipment, his portable accommodation, clean socks and many other impedimenta. His pack increases his size, its weight inhibits his mobility and, if he is lost, the overall loss of equipment is considerable. The same is true of a ship. A basic frigate hull when provided with machinery for a speed of 25 knots, passive submarine detection systems and facilities for refuelling and re-arming an ASW helicopter could today be produced for about £30 million. This would be a ship designed specifically for the one wartime role, detecting and sinking submarines. As the docket circulates through the Ministry the speed is considered too low, a hangar is considered essential, active sonar is believed to be 'mandatory', she must be capable of both ESM and ECM, her visiting helicopter is not an adequate weapons platform so she must have a profusion of ASW weapons and, finally, she cannot be allowed to sea without adequate defence against aircraft and missiles. Thus, by the time the proposal reaches the Operational Requirements Committee for the second time (stage eight of its progress) the cost may be in the region of £70 to 75 million and the whole plan is vetoed. A ship which was originally conceived as an effective unit of an ASW group or convoy escort in an area of low air threat, as well as being a useful addition to the fleet in peacetime, whose main expense lies in achieving a satisfactory acoustic signature for passive sonar operating has been thrown out because of a failure to appreciate the necessity of keeping to its single role with the resultant over-elaboration of its equipment.

If the simple frigate survives the Christmas Tree syndrome and is approved in principle the first hurdle has been surmounted. Many others remain because she will be expected to have a life of 20 to 25 years at least and over her total span every effort must be made to hold down costs. The initial capital payment probably represents only about 20 per cent of the full life-cycle cost. Maintenance, refits and modernisation represent almost a third of the total so the hull spaces must be designed with this in mind. Cramped machinery spaces cause delays, inadequate access to compartments means problems in removing and replacing equipment. Spacious hulls do not necessarily result in larger ships.

Stores and fuel provide another significant portion of the life-cycle cost but there is also a hidden increment. Ships with inadequate stowage for these two necessities require frequent replenishment which means more fleet support ships and the escorts to protect them in wartime. Again internal volume is a necessity if economy is to be preserved. At the same time the fuel consumption is a function of the maximum speed demanded. This has already been mentioned but speed for its own sake is possibly the most expensive of all luxuries. Once this is raised from the 23 to 25 knots bracket to 28 to 30 knots a leap of about an extra third in overall cost must be accepted. More power requires larger engines and this, in conventional designs, means a larger ship and, frequently, more men. At the same time there is a certain displacement, varying with the design, where the power required for a given speed rises dramatically. Thus the speed requirement is a vital element in the overall design and must be pared to the minimum required for carrying out the chosen role efficiently.

Finally, because of its greatest importance, is the question of the people to man the ship. Numbers have been reduced drastically in the last 40 years. In 1940 the 'C' class light-cruisers of 4200 tons with an overall length of 450 feet, a speed of 29 to 30 knots and an armament of five 6-inch guns required about 430 men. Today the early 'Broadsword' class of 4000 tons with an overall length of 430 feet, a speed of 30+ knots and an armament of four Exocet, Sea Wolf and two helicopters requires 223 men. The difference is remarkable but so, too, is the difference in accommodation and messing provided today. A junior rating is allotted nearly twice as much space to live in as his father in HMS *Caledon* and well over that amount as a senior rating. Thus it is not surprising that to increase the size of the ship's accommodation for an extra man above the designed complement means a rise in capital cost of some £50 000 and about £200 000 in that ship's life-cycle cost. Modern technology can reduce the manpower requirement but its application is seriously inhibited by the lengthy committee system now operating. Sudden discovery of a new and desirable technical feature and its incorporation in an already agreed design has frequently been shown to result in delays in construction and increases in costs well beyond the value of the feature in itself.

World-wide ship construction

This brief consideration of the problems facing the Royal Navy is a very simple approach to the manifold problems facing the modern naval architect. These are all compounded by such non-technical difficulties as lack of close contact between staff officers and designers and between industry and the naval authorities as well as by the inexperience of naval officers in making a clear statement of their requirements. Maybe everybody knows what he wants or what he means but the explanation to the designer and the builder of what is required is very often far from satisfactory.

In some navies this problem has apparently been surmounted to a large degree. The close co-operation between naval staff, designers and builders in the Netherlands has resulted in a steady building stream of the 'Kortenaer' class frigates which are now expected to enter service at six-monthly intervals. But the most evident results of close co-operation, admittedly in a very different climate of opinion from that in the West, are the many new classes now entering service

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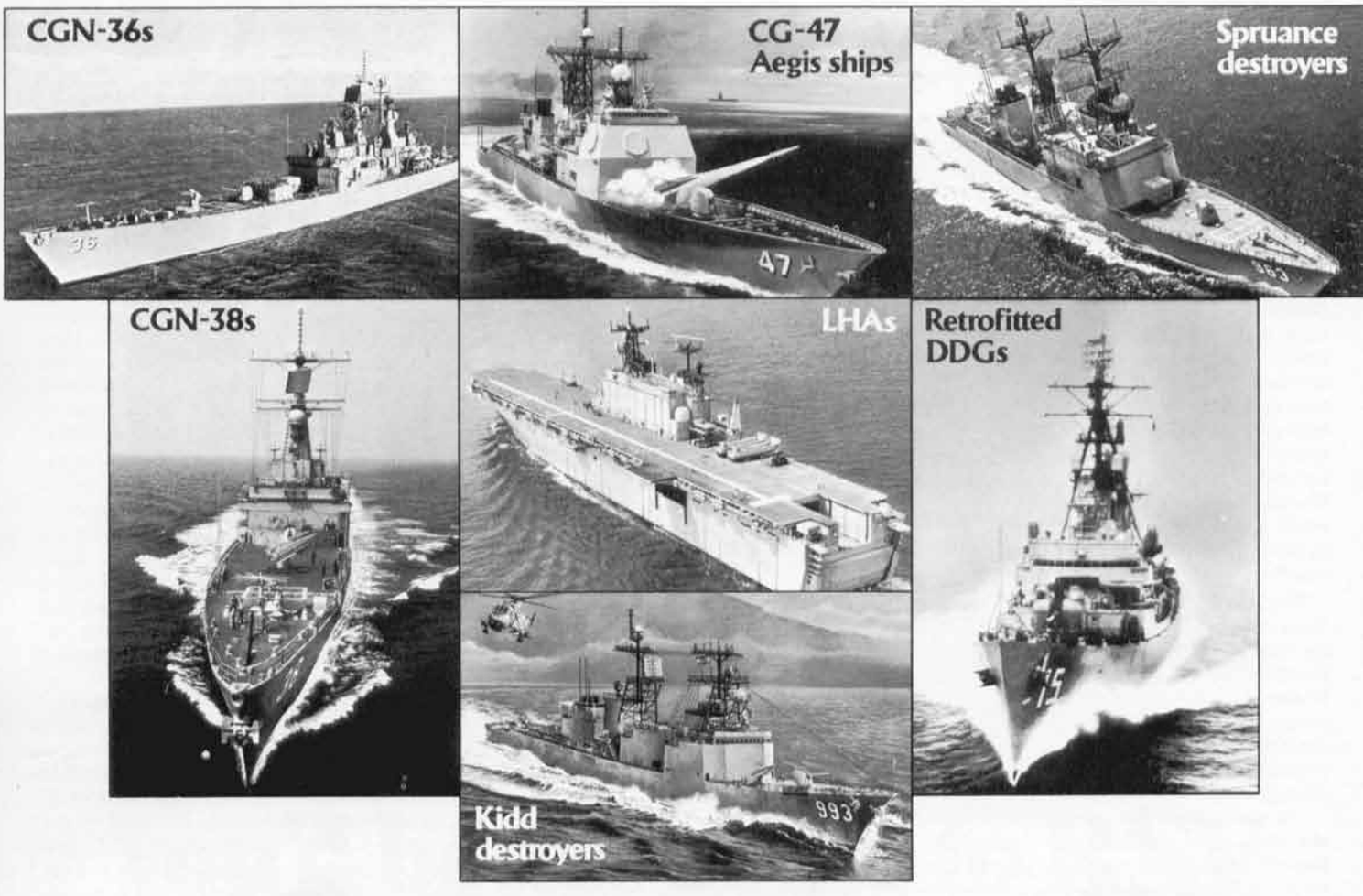

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in the Warsaw Pact navies. In 1976 Admiral Gorshkov wrote that 'it is now hard to say what peaks can be reached by human thought in 20 or 25 fast-moving years, but one thing is certain—ships will be quite dissimilar from present craft.'

The Warsaw Pact Navies

The first impression given by these navies is their homogenous form: the same hulls, the same missiles, radars, guns, engines and all the paraphernalia of a modern warship are shared between these five fleets. The equivalent in the Soviet navy is frequently more modern than that operated by its allies but the problems of spares, stores and the many difficulties of cross-operating experienced by NATO do not exist here. The Kremlin lays down the rules and the remainder have little choice but to obey.

But the major new developments in the Soviet fleet are unlikely to be shared with the smaller navies and represent the first steps on the 'dissimilar ships' path that Gorshkov has mapped out. The 'Typhoon' class ballistic-missile submarine of 30 000 tons may appear to be a clumsy and unhandy design but it has achieved the consolidation of all its major weapon systems in the forward section of the hull. Its mode of operation remains uncertain and may do for some time as the SS-NX-20 missiles destined for this class have yet to prove their efficiency in trials. Only two out of the first seven of these 6 MIRV missiles had flown a true course to full range by May 1981; it seems likely that the submarine may be completed before it has any complementary armament. Such a departure from normal practice suggests an urgent need.

The missiles for the 15 000 ton 'Oscar' class, the SS-N-19, are similar to those in the 'Kirov' class battle-cruiser but the submarine carries four more (24) than the larger surface ship. With a range around 300 miles and an improved homing head these missiles represent a major threat to surface forces, both naval and mercantile, as well as a notable bombardment capability in the strategic role. The basic idea is not new but its implementation is so far unique.

At the same time as these new classes have appeared, so variations of earlier classes have been produced; the single 'Yankee II' with 12 tubes for the SS-N-17 solid propellant, 1700 nautical mile missile; the 'Golf V' modification carrying extended range SS-N-8 missiles (8000 nautical miles?) and the other 'Golf' variants with SS-N-6 missiles or the communications fit necessary for command and control.

The new classes of Soviet submarines present a major ASW problem: their resistance to torpedo hits. The titanium-hulled 'Alfa' obtains this from the character of the metal of its hull while 'Typhoon' and 'Oscar' both have very wide water cushions between their outer and inner hulls. No submarine is invulnerable but these are probably less vulnerable than most and would require very sophisticated weaponry to deal with them, weapons that can seek out the weak spots such as propellers, hydroplanes and keel.

The philosophy behind the current and very large surface ship building programme of the USSR becomes more comprehensible if certain assumptions concerning Soviet wartime intentions are accepted. The first of these is that the main offensive power is considered to be in the submarine and air forces of that navy. The second is that every effort must be made to protect these two distinct groups in and around their home bases and on passage to their patrol areas. Because the USSR has the problems of geography to solve the latter presents serious difficulties: only Petropavlovsk has free access to a main ocean, although frequently impeded by ice from November to May. From all other bases ships, submarines and aircraft making for the main oceans have to pass through narrow defiles ranging from the 400 miles between Iceland and the Faeroes to the few hundred yards of the Bosphorus. At such danger points enemy action is most likely and covering forces most necessary. The Pacific and Atlantic passages are the most important not only for protecting outward and homeward bound attack submarines but also for preventing Western attack submarines penetrating to the patrol areas close to Soviet home waters in which the 'Delta' classes of ballistic submarines can operate. Thus the formidable surface action capabilities of the 'Kirov', 'Sovremenny' and 'Kresta I' classes could be satisfactorily allied with the ASW capabilities of the 'Kiev', 'Udaloy' and 'Kresta II' classes. When the expected nuclear-propelled carrier appears she may well have a dual capability and be a notable addition to such forces. At the same time the value of these surface ships and the very large number of naval-orientated merchant ships in a limited war or confrontation would be considerable. 'The Soviet Union has gained new and wider possibilities for the use of its navy in peacetime to ensure her state interests' writes Admiral Gorshkov.

The United States of America

The matter of 'state interests' is clearly of considerable importance to the new administration in the USA. If the Carter period did little to enhance the capabilities of the defence forces it did have one positive effect. The general public of the USA became more conscious of the defence problems of their country and their dependence on external sources, particularly for raw materials. Now it remains to be seen whether this attitude is reflected in the actions of Congress where not only must a majority of Senators and Representatives be in favour but also a fair proportion of that very large body of non-elected decision formers, the Congressional Staffs. Also affecting the issue is the influential group of some 3500 lobbyists, some with more of an eye to the main-chance than to their country's security.

What the Reagan administration is planning for the US Navy is set out in some detail in the USA section; recapitulation here would be a burden on the reader. Certain aspects, though, are most significant. The first is the value of keeping a significant number of ships in reserve. These may be outmoded in some respects but, in an emergency, are available to be brought forward. This present era is an emergency for the US Navy, described clearly by the CNO, Admiral Hayward, as a one and a half ocean navy striving to carry out a three ocean job.

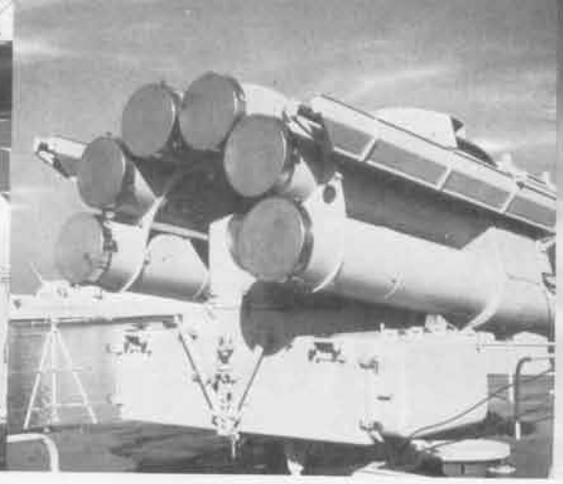
The second aspect is the length of time required to commission these ships, which could be an argument for periodic up-dates of reserve ships. The fact that a considerable number of merchant ships are to be incorporated in the Rapid Deployment Force indicates a need, if expansion is required, for an adequate merchant naval background. As this edition shows, the Soviet Navy is well served in this respect; what it does not show is the very high proportion of vessels vital to the American economy which now sail under foreign flags.

Thirdly is the subject of manpower: in wake of the comments in previous editions on the necessity of recruiting an adequately paid and trained pool of men and women comes the thought that ready reserves would be vital to a rapid expansion programme in times of crisis. It is incorrect to claim that at no time will there be sufficient opportunity to recall the reserves to active duty. Given effective intelligence and sound analysis there will be time, provided the organisation to cope with the response is adequate to the task. One thing is certain: today the Soviet navy could, in very short order, recall half a million trained reservists who could, if required, be integrated directly into the fleet.

Finally comes the need for expansion of warship production. President Reagan's plans provide for opening up extra shipyards. Forty years ago six yards were building some of the best submarines in the world. Today only two are operating and in the cases mentioned in the main text inadequate supervision, incompetent workmanship, the use of low standard steel and inefficient turbines have already resulted in unacceptable delays and heavy cost over-runs.

The rest of NATO

The problems of the Canadian and British naval forces have already been mentioned. But all NATO navies are the victims of a continuing failure to achieve standardisation. At a time when all Western fleets are suffering from similar abrupt rises in costs as in the two earlier examples, cuts are being made in overall building programmes. Nevertheless a wide range of national designs are under construction, some following the American practice of relying almost entirely on own resources for the provision of equipment and systems



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while others are purchasing these from their partners. Including the ships planned or in production for France there are today 14 different destroyer/frigate designs recently completed or building. The logistic support of such a disparate fleet in the event of a crisis can only result in a requirement for additional auxiliaries and wasted time.

The most recent figures available show that a total expenditure of about $18 000 million is incurred for defence research and development throughout NATO and it is estimated that $4000 million of this is wasted on duplication of effort. The British plans for a new diesel-propelled submarine give an illustration of the sort of money involved. In 1979 the unit cost of the Type 2400 design was given as £50 million. In the 1980 Statement on the Defence Estimates a sum of £170 million was mentioned for 'the complete development and production programme as it is now foreseen' for 'new sonars for surface ships and submarines.' In the 1981 Statement two separate sums appeared: £240 million for 'sonar, action information and fire control systems for new patrol submarine' and £100 million for 'weapon handling and launching system for new patrol submarine'. Thus by 1981 the reference to 'surface ships' had been dropped, the systems were now specifically for new 'patrol submarines' and, even allowing for a year's inflation, the new figure of £340 million represents the overall cost of over four submarines if the original estimate is to be believed. In the background are two other facts: an American bid to supply the action information and fire control systems at £1.5 million per submarine had been turned down, while ten sets of Eledone submarine sonar had been ordered in France. There is doubtless an explanation for these discrepancies but it is certainly hard to find.

Overseas sales

The standardisation achieved within the Warsaw Pact naval forces is well known and this is now shared with many other countries beyond the Iron Curtain. Apart from Albania, Egypt, Indonesia and Somalia which have severed their connections with the USSR, although still running Soviet-built vessels, the following countries currently operate ships or submarines from the Soviet Union: Algeria, Angola, Benin, Bulgaria, Cape Verde, Congo, Cuba, Equatorial Guinea, Ethiopia, Finland, East Germany, Guinea, Guinea-Bissau, India, Iraq, North Korea, Libya, Mauritania, Mozambique, Poland, Romania, Sri Lanka, Syria, Tanzania, Viet-Nam, North and South Yemen and Yugoslavia. New frigates have recently been transferred to Algeria and Yugoslavia and India is commissioning the three new 'Kashin II' class destroyers. Viet-Nam's forces now operate four 'Petya' class frigates as well as an expanding number of smaller craft.

This concentrated naval effort must be compared with the marketing efforts of Western countries. Although the USA has transferred ships to 38 countries over the years these vessels are all of out-dated designs and surplus to requirements. The only two countries giving substantial orders for new construction of larger ships have been Iran and Saudi Arabia. The former has withdrawn from its contract and the latter has now placed a substantial order with France. This reflects the fact that most foreign orders for major warships are now being placed in Western Europe where highly competitive tenders and fierce marketing efforts are the order of the day. It is notable that the last such contract for a British shipbuilder was concluded in 1970. Modern American and British designs in production for those two navies are too complex and too expensive for the average overseas customer. In achieving a satisfactory reduction in own unit costs two matters are of great importance: a healthy and efficient industry and the use of designs which not only meet the needs of the building country but also are acceptable to foreign purchasers.

Indigenous building

Apart from the major Western and Warsaw Pact building yards there is steady production taking place in other countries, some of which have not been renowned for ship construction in the past. In Brazil frigates are being built at Rio de Janeiro, Argentina is capable of building or assembling all types from submarines and destroyers downwards and while Chile and Venezuela rely on foreign yards, Peru is building frigates at Callao. Across the Pacific the Japanese yards are living up to their long reputation in this field and are turning out submarines, destroyers, frigates and all types of other ships and auxiliaries. Slightly less than three years is the average time for building a submarine or large destroyer while auxiliaries, survey ships and large coast guard vessels are completed in 12 to 18 months. Neighbouring China's building times are slightly longer but their ships at present lack modern sensors and action information organisations. Nevertheless their overall designs are in step with current practice and their new research ships, support ships and tankers illustrate a determination to provide a considerable and capable fleet. This is hardly surprising with the main base of the steadily expanding Soviet Pacific Fleet only a day's steaming from China's northern sea frontier.

Between these two giants lie the two Koreas. North Korea has had a minor vessel building capability for 20 years. In the 1970s this was supplemented by the construction of submarines and small frigates so that their southern neighbours now face a navy with 16 submarines and the largest inventory of Light Forces apart from China and the USSR. In their turn the South Koreans have designed and are building a bewildering array of submarines and small vessels of 500 tons and below which are listed in the *Addenda*.

With three naval shipyards and additional civilian facilities Taiwan has been forced to produce its own craft, the first of which are armed with Hsuing Feng missiles, a derivative of the Israeli Gabriel. Light and amphibious craft can also be constructed in yards in the Philippines, Thailand, Burma, Malaysia, Singapore and Indonesia. Larger auxiliaries are also under construction on some of these slips and the next few years could well see a growing independence of overseas builders.

Australia has an increasing number of yards capable of providing naval vessels: frigates, possibly submarines, large support ships and all the smaller craft required on that huge coastline. Across the Tasman Sea New Zealand has small building slips but, so far, the only naval craft locally built are two survey craft and tugs. With a need for patrol craft and minewarfare vessels these yards could be put to naval use. This has been the case in South Africa where an embattled country has turned to its own resources. In Durban more craft are being built to the Israeli 'Reshef' design and a large class of harbour patrol vessels have been completed, with more to come. Despite the small yards in Egypt, Algeria, Gabon and Senegal which have produced naval craft, it is the countries of this continent which will remain most dependent on external supply for many years to come.

Finale

The subject of this foreword was prompted by the growing evidence that Western navies are being increasingly constrained in their building programmes by rapidly rising costs and that governments are taking short-term measures by imposing cash limits. These may well have adverse effects on the most essential part of any fleet: the men and their training. It is therefore essential to find speedy solutions to the shipbuilding problem rather than embarking on plans to cut roles, reduce sea-time and curtail reserves.

There is no doubt that NATO standardisation is a mess: minor alleviations have taken place but national industrial demands have taken precedence over the requirements of the alliance and, in a rapidly advancing technological environment, electronic standardisation is chaotic. In purely naval terms the waste of research and development resources throughout NATO caused by duplication is the equivalent of 20 to 30 frigates every year.

But these ships are over-priced already because of delays in decision-making, inefficient procurement practices and a failure to capitalise on modern thinking. The first of these suggests a need to provide a system that can keep pace with today's accelerating improvements which can be outdated in a year or two and are certain to be obsolescent in ten years' time. This faster pace must be reflected

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in far more flexible and responsive procurement organisations but, most important of all probably, is the initial isolation of a role for the ships required and a willingness on the part of designers to accept new concepts. That these exist in many areas there is no doubt. What must be avoided is what Edmund Burke described as the resolution 'to die in the last ditch of prevarication'. Long held theories can be wrong, as the opponents of Galileo and his successors could testify were they available as witnesses. Today alternative theories of hull-form are available but the evidence of this book suggests that they are not being applied.

Until the NATO navies achieve a situation in which decisions based upon modern practices are taken with alacrity, in which the supporting evidence is provided by staffs not only well versed in the problems of industry and the financial problems of the country but are directed to monitor the initial and life-cycle costs of the ships—in short, are fully accountable—and in which a determined effort is made to force any opposition into reactive procedures the strength of the Alliance will suffer. As that great and wise man, Benjamin Franklin, wrote 'Do not squander time for that's the stuff that life is made of.'

CAPTAIN J. E. MOORE, RN
May 1981

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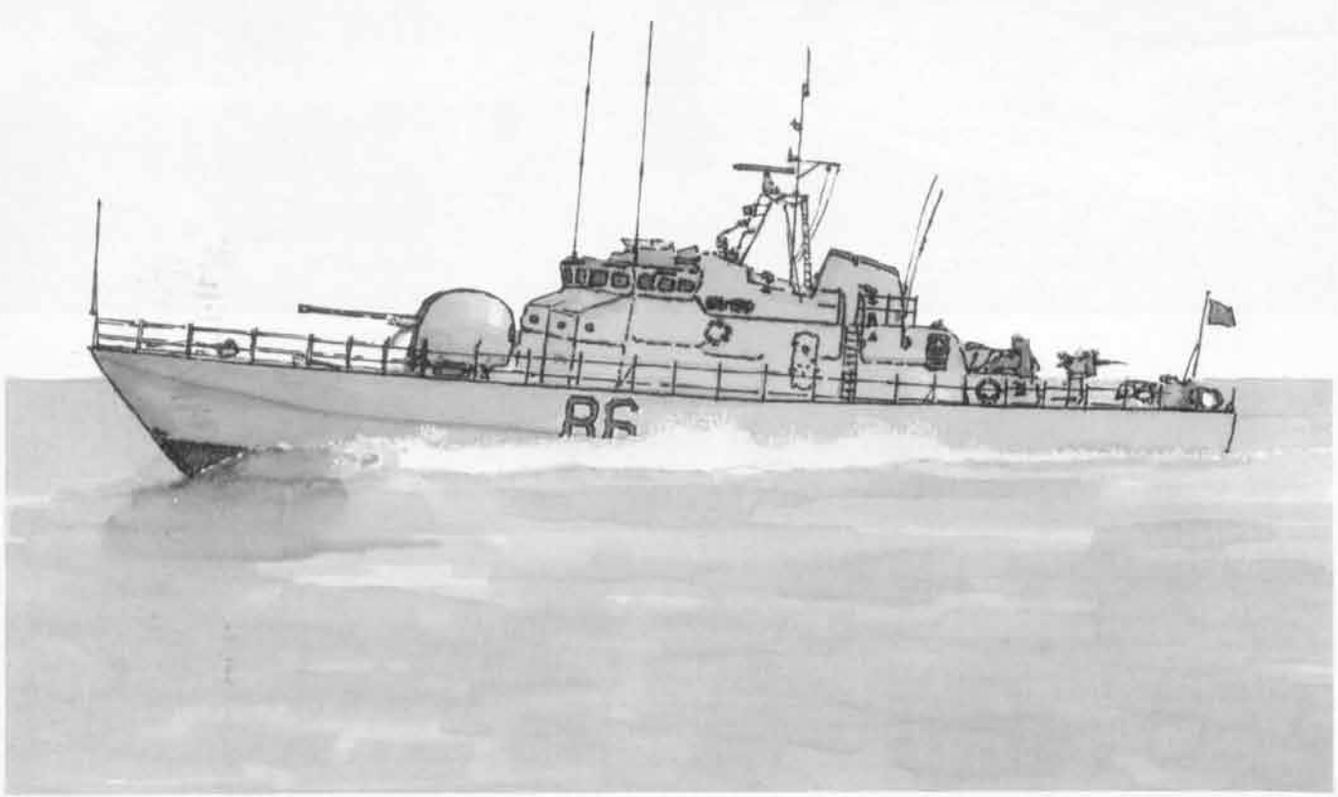

ACKNOWLEDGEMENTS

Once again there has been a steady flow of correspondence which has brought information, suggestions, corrections and photographs for this new edition. In some a great deal of time and effort has been spent in preparing these contributions while others are brief notes on one particular subject. I do my best to provide timely thanks and acknowledgements for all these letters but if they are sometimes a little delayed I must ask for people's indulgence. The task of collating the mass of information is considerable and in this my wife and Mrs Jean Parsons provide unstinted help. The compilation of the book itself is a task which occupies nearly every day from January to mid-May so opportunities for lengthy correspondence are very limited. But my thanks to all who help are most heart-felt: without the hawk-eyed attention of so many people throughout the world it would be a far more difficult task to achieve the standard of accuracy we seek.

There have been many valuable contributions directly from Governments and Naval Headquarters as well as those sent through Naval Attachés in London. It is encouraging to see that so many official sources consider it necessary to provide information to a major reference book. It is to be hoped that certain others will, one day, follow their example. To those who appreciate the value of a true record of their fleets, my thanks.

Amongst the non-official contributors to this book there are some who must receive personal acknowledgement for the tremendous help they provide:-

Our senior consultant, Captain Frans de Blocq van Kuffeler, Mr Samuel Morison, without whom the preparation of the US section would be an impossibility, Mr Graeme Andrews, Dr Ian Buxton, Commander Roy Corlett, Mr D. Dervissis, Mr Adrian English, Commander Aldo Fraccaroli, Commander A. W. Grazebrook, Sub-Lieutenant James Goldrick, Lieutenant-Commander A. Hague VRD, Mr K. Jacobs, Sub-Lieutenant Peter Jones, Mr Ron Jones, Mr Jurg Meister, Mr John Mortimer, Mr A. J. R. Risseeuw, Mr C. W. E. Richardson, Dr Robert Scheina, Señor Xuan Taibo and Mr John Young. Of other Jane's Yearbooks I have made free use and am most grateful to Mr John Taylor of *All the World's Aircraft* for his help and his preparation of the aircraft tables, and to Mr Ron Pretty of *Weapon Systems* and Mr Roy McLeavy of *Surface Skimmers* for their advice. To this list must be added the editors of those other major naval reference books—M. Jean Labayle Couhat of *Flottes de Combat*, Herr Gerhard Albrecht of *Weyer's Flottentaschenbuch*, Signor G. Giorgerini and Signor A. Nani of *Almanacco Navale* and Captain Allan Kull of *Marinkalender*.

Finally, and in a very special category, I include our dear friend Contre-Amiral M. Adam CVO, CBE who, despite undergoing very intensive surgery in his 82nd year, has continued to provide a most valued correspondence from his home in Brest.

The number of shipbuilders and manufacturers who have sent me most helpful information is increasing steadily and this year the news from abroad has out-distanced that from the United Kingdom. Once again, my thanks.

A book of this type would be incomplete without its illustrations and these, in the form of photographs and drawings continue to flood in. I only wish I could use them all but my gratitude is just as great to those whose names are not listed as to those who are publicly acknowledged in the captions.

In the USA section there have been many who have done much to help Mr Samuel L. Morison in his task and in particular he wishes to thank the following for their invaluable assistance:

Rear-Admiral Byron B. Newell Jnr, USN, Chief of Naval Information; Commander James J. Harness Jnr, USN, Mr Robert Carlisle and Chief Yeoman Nicholas Goodpaster of his staff; Lieutenant Commander R. A. Fliegel, USN, Security Assistance Division, Office of Chief of Naval Operations; Captain R. E. Groder, USN and Mr David Mayberry of the Ships Maintenance and Logistics Division, Office of Chief of Naval Operations; Mr Tom Lister, Office of Chief of Naval Operations; Mr Gary Jayne, Naval Sea Systems Command; Mr Stanley Krol, Navy Shipbuilding and Scheduling Office, Naval Sea Systems Command; Mr Christopher Wright, Office of Chief of Naval Operations; Mrs Jeanne Koontz, Miss Barbara Gilmore and Mr Charles Haberlain, Naval Historical Center; Dr Robert L. Scheina, US Coast Guard Historian and finally Mr Morison would especially like to acknowledge the following: Lieutenant Michael Thurwanger, Office of Chief of Naval Information for putting up with my avalanche of questions; Mr Louis Granger, Public Affairs Officer, Military Sealift Command; Captain Maurice Bresnahan, Ships Maintenance and Logistics Division and Sylvia Griffiths.

From my own point of view nothing would get done were it not for the help and advice of my wife and Mrs Jean Parsons and the unfailing co-operation of the publishers with Mr Sidney Jackson in the driving seat. Luckily for me the teams who deal with this book remain unchanged: Valerie Passmore and Susan Walby on the editorial bench, Ken Harris and Anne Corfield from the production department, Tony Hesketh-Gardner and Anne McKrill of the advertising section and, finally, June Ayles and Andrea Pomroy who have never failed to respond to outrageous requests far beyond the call of duty.

At the very end, because it is difficult to thank them enough, are those whose complaints never get beyond their own four walls in furthest Yorkshire, the printers Netherwood Dalton of Huddersfield.

For next year we are already gathering information and illustrations and will you please send all you have to:

Captain J. E. Moore RN
Elmhurst
Rickney
Hailsham
East Sussex
BN27 1SF
England

May I repeat that compilation of the next edition starts on 1 January 1982 so it would be a great help to have major contributions as soon as possible.

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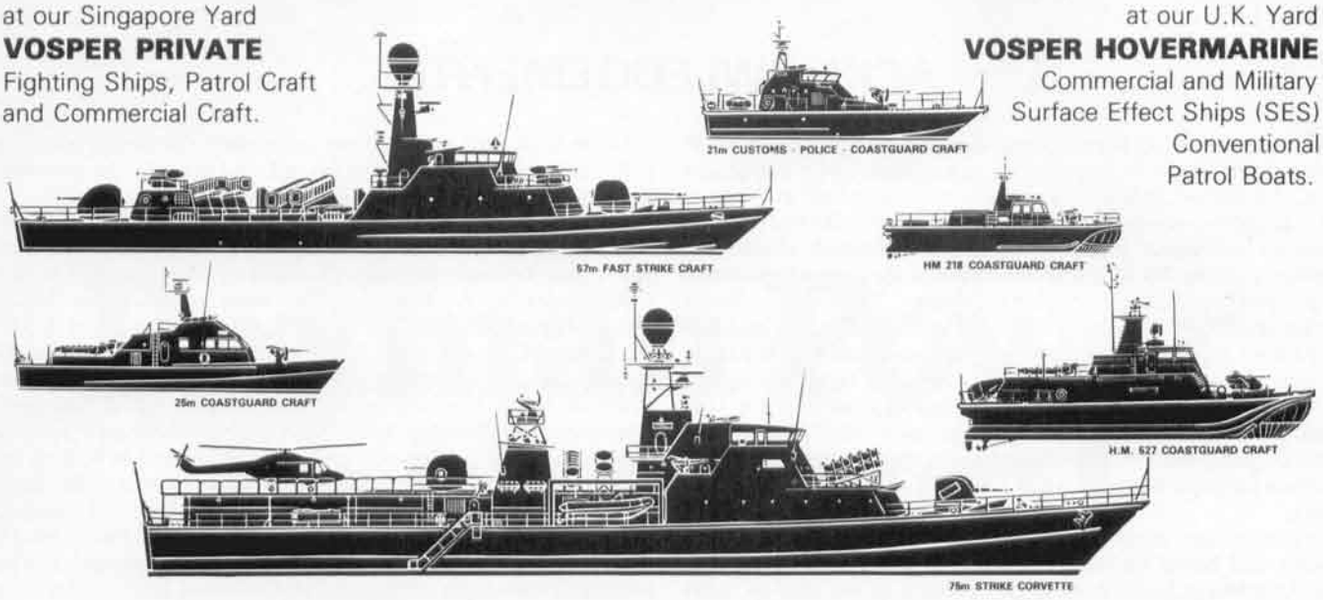
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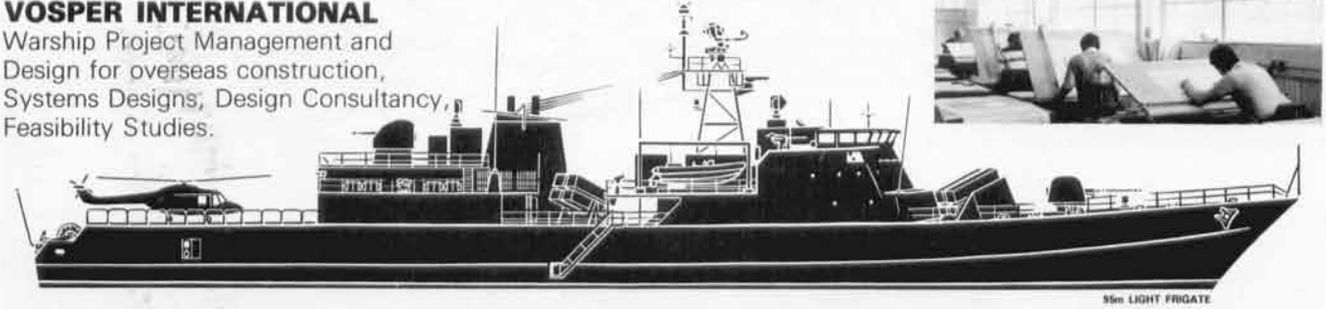

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MAJOR MATTERS

Albania
Four Hoku not delivered.

Algeria
USSR provided in 1980 one "Koni", one "Nanuchka" class.
Home produced by 1983 four FAC(M)-? two Otomat.

Argentina
Building continues of one plus three TR 1700 type and two TR 1400 type submarines (projected), one plus three Meko 360 type destroyers and six Meko 1470 type frigates.
One more A69 type delivered.

Australia
Government decisions to build fourth FFG in USA, two plus four FFGs in Williamstown (after modernisation) in place of "Rivers".
Improvements to Cockburn Sound and Garden Island in hand.
"Fremantle" class continue and orders for first five of ten extra LPC.
Second "Durance" class to be ordered.
Aircraft carrier decision to be made in 1981 (?"Inchon" with gas turbines).
Mk 48 and Harpoon for submarines; Harpoon for "Perth" class.

Bangladesh
Four Shanghai II transferred June/July 1980.

Belgium
All four MSCs to unmanned reserve.

Brazil
Decision expected shortly on choice of new submarines, possibly Italian design.
Training ship to general design of "Niteroi" class to be ordered.

Bulgaria
Four "Yevgenya" class sweeper/hunters (1974).
New 2000-ton tanker.

Burma
Third "Osprey" class OPV ordered.

Canada
Two designs for new destroyer/frigate to be considered mid-1981.
Canada Coast Guard: Third "R" class icebreaker ordered 1980.

Cape Verde
"Zhuk" class CPC delivered 1980.

Chile
Two submarines ordered in West Germany late 1980.
Ten more 61-foot coastal patrol craft commissioned in 1980.

China
Further series of "Luda" class (DDGs) building.
Continued building programme of submarines and light forces.
New class of LSTs under construction.
Two large and two smaller submarine rescue ships in commission.
Two space event ships in commission.
Up to ten new research ships operating.
One new geophysical research ship and two more ordered.
Two large replenishment tankers in commission.

Colombia
Four 1850-ton frigates to be ordered from Howaldtswerke, West Germany.

Cuba
USSR has delivered two more "Turya" class hydrofoils, six more "Zhuk" class, two "Sonya" class MSCs and two "Yevgenya" class MSIs.

Denmark
Plans continue for four new submarines.
Second "Niels Juel" class completing.

Ecuador
First of Italian 550-ton missile corvettes launched.

Egypt
Reported that China is transferring some "Romeo" class submarines.
Five more "Ramadan" class FAC(M) completed.
Three more "Oktober" class FAC(M) reported building in Alexandria.

Ethiopia
Two "Osa" class delivered (see Addenda).

Finland
Hämeenmäa converted to minelayer.
One prototype 300-ton FAC and one 50-ton CPC (both as start of series production) delivered.

France
First SSN renamed *Rubis*.
Two nuclear propelled aircraft carriers planned.
Tenth A69 type commissioned.
Two "Super Patra" class FAC(M) ordered.
Public Service Force (FSMC) inaugurated with *Sterne* with 11 more ships and craft to be built for this force.
Total order for "Eridan" class minehunters possibly only ten.
New survey ship to be ordered.
Fourth "Durance" class ordered.
Four new 460-ton training ships ordered with further four provided for.

Germany, Democratic Republic
First "Koralle" class 1200-ton corvette commissioned with two more in 1981 and three more building.

Germany, Federal Republic
Type 208 submarines being developed, probably with fuel cell propulsion.
Four type 122 frigates now launched.
Ten type 143A FAC(M) under construction.
Ten type 343 MSBs to be built by 1983.
Further class, Type 332, to be built in late 1980s.

Greece
Two "Gearing" class transferred August 1980 by US Navy.
Two "Fletcher" class transferred by Federal German Navy.
One Netherlands "Kortenaer" class ordered for delivery in 1981 with three more to be built in Greece.
Further four "Combattante III" class FAC(M) completed.
Two more coastal patrol craft.

Guinea-Bissau
Three coastal patrol craft provided by Spain.

Hong Kong
Three "Damen" class 86-ton patrol craft delivered to Royal Hong Kong Police.

India
Probability of construction of Howaldtswerke 1500 design at Bombay.
Plans reported for purchase of second carrier (?HMS *Triumph*). Not known if this is for spares or operations.
First Soviet "Kashin II" class delivered with two to follow.
First "Godavari" class frigate launched with second laid down.
Both "Whitby" class armed with SS-N-2.
Third pair of "Natya" class MSOs delivered.
India Coast Guard: Three 1040-ton offshore patrol vessels and three 200-ton inshore patrol vessels ordered.

Indonesia
Second pair of 209 type submarines ordered.
Third frigate delivered from Netherlands.
Four LSTs ordered in Japan.
Over 50 60-ton customs patrol craft building or on order.

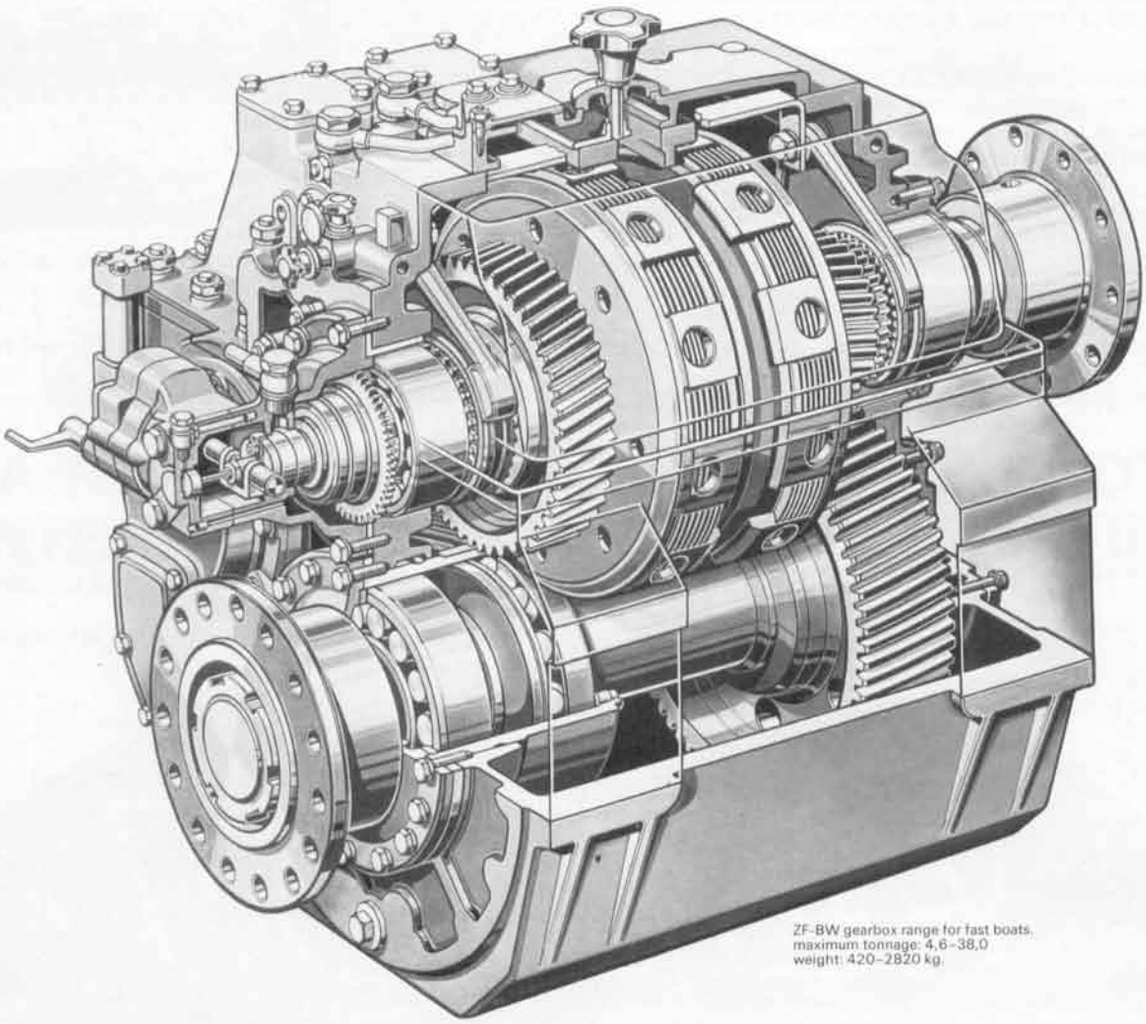
Iraq
Fourth "Polnochniy" class delivered by USSR.
One Yugoslav frigate/training ship reported delivered.
Order for four "Lupo" class frigates, six 650-ton missile corvettes and a tanker from Italy.

Ireland
Two helicopter equipped patrol vessels to be ordered.

Israel
First of helicopter equipped enlarged "Saar 4" class launched.

Italy
Second pair of "Sauro" class submarines to commission in 1981.
New light aircraft carrier to be laid down in 1981.
First "Maestrale" class frigate launched with two more to follow in 1981.
First new "Lerici" class due for completion 1981.
Conversion of "Adjutant" and "Agave" classes to minehunters to be completed in 1981.

Japan
Maritime Self-Defence Force: Second "Yuushio" class submarine commissioned with three more building.
New design 4500-ton destroyer to be ordered.
Seven 2950-ton "Hatsuyuki" class destroyers under construction with two more to follow.
Third 3900-ton "Tachikaze" class destroyer launched.
Ishikari, 1250-ton frigate, commissioned.
Two 590-ton LSUs under construction with third to follow.



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Two "Hatsushima" class MSCs commissioned with four to follow.
New construction survey ship due for launching.
A 17 600-ton icebreaker under construction.
Japan Maritime Safety Agency: 17 patrol vessels of various sizes commissioned with two under construction.

Korea, Democratic People's Republic (North)
Steady construction of submarines and light forces.

Korea, Republic (South)
See Addenda for new construction.

Kuwait
Eight "TNC 45" Type FAC(M) ordered from Lürssen in 1980.

Lebanon
Two Fairey Tracker Mk II ordered in the UK.

Liberia
Three 50-ton CPCs delivered from Sweden.

Libya
One "Foxtrot" class submarine delivered.
All four Italian missile corvettes commissioned.
Two ex-Soviet "Natya" class MSOs delivered.
Delivery of completed "Combattante IIG" class FAC(M) delayed by French government.
Total of three "Polnochniy" class LCTs confirmed.
First two of an order of nine Turkish "C107" class LCTs delivered.

Malaysia
Four "Lerici" class minehunters ordered from Italy.
One logistic support ship delivered by West Germany.
Two more ships, possibly sisters of LSL, on order from West Germany.

Mauritania
Third "Barcello" class LPC delivered.

Mexico
Four "Azteca" class delivered.

Morocco
Four "Cormoran" class FAC(G) delivered from Spain.

Mozambique
Two "Zhuk" class CPCs delivered by the USSR.

Netherlands
Two more "Kortenaer" class frigates delivered with seven more building for total of 12.
Modernisation of four "Van Speijk" class frigates completed with two to go.
Six "Alkmaar" class minehunters now ordered.

New Zealand
Purchase of one Netherlands "Kortenaer" class frigate under discussion.

Nigeria
Blohm and Voss Meko 360 type frigate due for delivery in 1981.
Three Lürssen "FPB 57" class FAC(M) completed.
Three "Combattante IIIB" FAC(M) completed.

Norway
Seven "Hauk" class FAC(M) completed for total of 14.
Norway Coast Guard: Three "Nordkapp" class patrol vessels completed.

Oman
One Vosper Thornycroft 56-metre FAC(M) building with two more ordered.

Pakistan
Two "Gearing" class destroyers purchased from the USA.

Peru
Fourth 1200 type submarine delivered from West Germany with two to follow.
Four ex-Netherlands "Friesland" class destroyers purchased.
Six "PR 72P" class FAC(M) delivered by France.

Philippines
Three "PSMM5" class FAC(M) ordered from South Korea-Tacoma.

Qatar
Three FAC(M) ordered in France.
Seven Watercraft P1200 type CPCs delivered.

Romania
Totals of light forces revised.

Saudi Arabia
Four F2000 type frigates and two "Modified Durance" class replenishment ships ordered from France.
Four 815-ton missile corvettes completed in the USA.
Seven 384-ton FAC(M) completed in the USA with two to follow.
Total of 430 craft of varying sizes now listed in Saudi Coast Guard.

Senegal
One "PR 72M" class delivered from France.

South Africa
Sixteen harbour patrol craft completed with eight to follow.

Spain
First pair of "Agosta" class submarines completed.
New light aircraft-carrier due for launching.
First "FFG 7" class frigate laid down.
Fifth "Descubierta" class frigate commissioned with three more to follow by mid-1982.
Six 296-ton LPCs completed with four to follow.
Two "Paul Revere" class APAs transferred in place of previous ships of same name (*Castilla* and *Aragon*).

Sri Lanka
Two more "Shanghai II" class transferred.
Three 40-ton CPCs completed.

Sweden
Contract for building four "A 17" class placed with Kockums Malmö.
All 17 "Hugin" class FAC(M) now in commission.
Minelayer *Carlskrona* launched.
Two GRP minehunters ordered (Addenda).

Syria
Four "Osa II" class FAC(M) delivered.
One "Yevgenya" class MSI delivered.

Taiwan
Construction of two "Walrus" class submarines in Netherlands under discussion.
Two "Gearing" class delivered by the US Navy.
New class of 50-ton FAC(M) under construction in Taiwan.

Thailand
Two FAC(M) ordered in Italy for delivery in 1982.
New MCM support ship completed by Bangkok Dock Company.
Four LCTs ordered from Bangkok Dock Company.
One oceanographic ship building by Bangkok Dock Company.
One 960-ton replenishment tanker built in Singapore.

Tunisia
Possibly three PB 57 type FACs ordered from Lürssen, West Germany.

Turkey
Three "Gearing" class transferred by the US Navy.
All "Kartal" class now carry missiles.
Further LCTs being built.

Union of Soviet Socialist Republics
"Alfa", "Charlie II", "Victor III" and "Tango" class submarines in series production.
Launch of "Oscar" class cruise missile nuclear submarine in spring 1980. Of 18 000 tons with 24 SS-N-19 missiles.
Launch of "Typhoon" class SSBN of 30 000 tons in autumn 1980.
Third "Kiev" class aircraft carrier due to commission in 1981.
First "Kirov" class battle cruiser commissioned with second building.
First "Udaloy" class cruiser on trials early 1981 showing ASW configuration.
First "Sovremenny" class on trials late 1980 without armament.
Further trials March 1981 with four 130 mm guns in twin turrets of new type.
"Matka" class missile hydrofoil in series production of about three a year.

United Kingdom
Order expected for fourth "Trafalgar" class SSBN.
With *Bulwark* paid off *Illustrious* due to commission in 1982.
With *Kent* unlikely to go to sea again and all six "Tribal" class paid off one 22 type and one 42 type due for commissioning in 1981.
First of Batch 3 "Leander" class *(Andromeda)* commissioned after conversion.
Second "Hunt" class MCMV *(Ledbury)* commissioned.

United States of America
The considerable changes in the US Navy programmes proposed by the new Administration are listed on pages 593-594 and in the Addenda.
Rapid Deployment Force listings on page 694.

Uruguay
Three "Vigilante" class LPCs commissioned.

Venezuela
Two more "Lupo" class frigates commissioned.

Viet-Nam
Two more "Petya I" class, six more "Osa II" class, four more "Shershen" class and four "SO 1" class delivered by the USSR.

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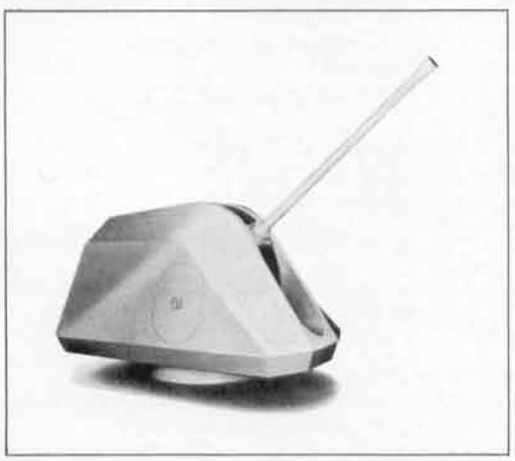

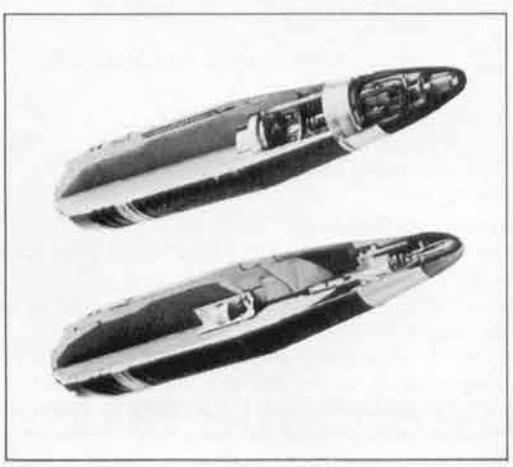

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GLOSSARY

AA Anti-aircraft.

ARM Anti-radiation missile.

A/S ASW Anti-submarine (warfare).

ASM Air to surface missile.

BPDMS Basic point defence missile system.

Cal Calibre—the diameter of a gun barrel; also used for measuring length of the barrel eg. A 6-inch gun 50 calibres long (6 in/50) would be 25 feet long.

CIWS Close in weapon system eg. US 20 mm Phalanx.

CODAG, CODOG, COGAG, COGOG, COSAG Descriptions of mixed propulsion systems—Combined diesel and/or gas turbine, diesel or gas turbine, gas turbine and/or gas turbine, gas turbine or gas turbine, steam and/or gas turbine.

DC Depth charge.

DCT Depth charge thrower.

DP Dual purpose (gun) for surface or AA use.

Displacement Basically the weight of water displaced by a ship's hull when floating:
(a) Light: without fuel, water or ammunition.
(b) Normal: used for Japanese MSA ships. Similar to "standard".
(c) Standard: as defined by Washington Naval Conference 1922—fully manned and stored but without fuel or reserve feed-water.
(d) Full load: fully laden with all stores, ammunition, fuel and water.

ECM Electronic counter measures eg. jamming.

ELINT Electronic intelligence eg. recording radar, W/T etc.

FRAM US Navy's "Fleet rehabilitation and modernisation" programme.

Hedgehog Spigot mortar for firing anti-submarine bombs.

Horsepower Power developed or applied:
(a) bhp: brake horsepower = power available at the crankshaft.
(b) shp: shaft horsepower = power delivered to the propeller shaft.
(c) ihp: indicated horsepower = power produced by expansion of gases in the cylinders of reciprocating steam engines.
NB. If the type of horsepower is not known hp is used instead.

Length Expressed in various ways:
(a) oa: overall = length between extremities.
(b) pp: between perpendiculars = between fore side of the stem and after side of the rudderpost.
(c) wl: water-line = between extremities on the water-line.

MAD Magnetic Anomaly Detector—for anti-submarine detection identifying a steel body in the earth's magnetic field.

MAP US Military Aid Programme.

Mousetrap Ahead throwing spigot A/S mortar for small ships.

MSC US Military Sealift Command.

NTDS Naval tactical data system.

rpm Revolutions per minute of engines, propellers, radar aerials etc.

SAM Surface to air missile.

SLBM Submarine launched ballistic missile.

SLEP US Service Life Extension Programme for aircraft carriers.

SSBN Nuclear-powered ballistic missile submarine.

SSM Surface to surface missile.

Tonnage Measurement tons, computed on capacity of a ship's hull rather than its displacement (qv.):
(a) Gross: the internal volume of all spaces within the hull and all permanently enclosed spaces above decks that are available for cargo, stores and accommodation. The result in cubic feet divided by 100 = gross tonnage.
(b) Net: gross minus all those spaces used for machinery, accommodation etc. ("non-earning" spaces).
(c) Deadweight (dwt): the amount of cargo, bunkers, stores etc. that a ship can carry at her load draught.

VDS Variable depth sonar which is lowered to best listening depth. Known as dunking sonar in helicopters.

SHIP DESIGNATIONS

In an effort to standardise the type designations in the various navies, despite somewhat idiosyncratic listing in some fleets, a regular formula has been used wherever possible in the majority of sections. This has caused some queries and comments, therefore a list is given below.

SUBMARINES

Strategic Missile	Nuclear propelled and conventionally propelled
Cruise Missile	Nuclear propelled and conventionally propelled
Fleet Submarines	Nuclear propelled—torpedo attack
Patrol Submarines	Conventionally propelled—torpedo attack

AIRCRAFT CARRIERS

Attack Aircraft Carriers (Nuclear)	(US) "Nimitz" and "Enterprise" classes
Attack Aircraft Carriers	
ASW Aircraft Carriers	
Light Aircraft Carriers	"Invincible" class, "Moskva" class

MAJOR SURFACE SHIPS

Cruisers	Over 10 000 tons, including missile conversions
Light Cruisers	7 000 tons to 10 000 tons
Destroyers	3 000 to 7 000 tons, plus original conventional destroyers
Frigates	1 100 to 3 000 tons
Corvettes	500 to 1 100 tons

LIGHT FORCES

Fast Attack Craft (FAC) (25 knots and above)	FAC (Missile) FAC (Gun) FAC (Torpedo) FAC (Patrol)
Patrol Craft (below 25 knots)	Large Patrol Craft (100 to 500 tons) Coastal Patrol Craft (below 100 tons)

AMPHIBIOUS FORCES	Command Ships Assault Ships Landing Ships Landing Craft Transports
MINE WARFARE FORCES	Minelayers MCM Support Ships Mine Sweepers (Ocean) Mine Hunters Mine Sweepers (Coastal) Mine Sweepers (Inshore) Mine Sweeping Boats
SURVEYING VESSELS	Surveying Ships Coastal Surveying Craft Inshore Surveying Craft

MAJOR SURFACE SHIPS
PENNANT LIST

Alb	Albania
Alg	Algeria
Ana	Anguilla
Ang	Angola
Arg	Argentina
Aus	Austria
Aust	Australia
Ban	Bangladesh
Bar	Barbados
Bel	Belgium
Ben	Benin
Bhm	Bahamas
Bhr	Bahrain
Blz	Belize
Bmd	Bermuda
Bol	Bolivia
Bru	Brunei
Brz	Brazil
Bul	Bulgaria
Bur	Burma
Cam	Cameroon
Can	Canada
Chi	Chile
Col	Colombia
Com	Comoro Islands
Con	Congo
CPR	China, People's Republic
CpV	Cape Verde
CR	Costa Rica
Cub	Cuba
Cyp	Cyprus
Cz	Czechoslovakia
Den	Denmark
DPRK	Korea, Democratic People's Republic (North)
DR	Dominican Republic
Ecu	Ecuador
Egy	Egypt
ElS	El Salvador
EqG	Equatorial Guinea
Eth	Ethiopia
Fij	Fiji
Fin	Finland
Fra	France
Gab	Gabon
Gam	Gambia
GB	Guinea Bissau
GDR	Germany, Democratic Republic
GFR	Germany, Federal Republic
Gha	Ghana
Gn	Guinea
Gra	Grenada
Gre	Greece
Gua	Guatemala
Guy	Guyana
Hai	Haiti
HK	Hong Kong
Hon	Honduras
Hun	Hungary
IC	Ivory Coast
Ice	Iceland
Ind	India
Indo	Indonesia
Iran	Iran
Iraq	Iraq
Ire	Ireland
Isr	Israel
Ita	Italy
Jam	Jamaica
Jap	Japan
Jor	Jordan
Kam	Kampuchea
Ken	Kenya
Kwt	Kuwait
Lao	Laos
Lbr	Liberia
Lby	Libya
Leb	Lebanon
Mad	Madagascar
Mex	Mexico
Mlt	Malta
Mlw	Malawi
Mly	Malaysia
Mnt	Montserrat
Mor	Morocco
Moz	Mozambique
Mrt	Mauritius
Mtn	Mauritania
Nic	Nicaragua
Nig	Nigeria
Nld	Netherlands
Nor	Norway
NZ	New Zealand
Omn	Oman
Pak	Pakistan
Pan	Panama
Par	Paraguay
Per	Peru
Plp	Philippines
PNG	Papua New Guinea
Pol	Poland
Por	Portugal
Qat	Qatar
RoC	Taiwan
RoK	Korea, Republic (South)
Rom	Romania
SA	South Africa
SAr	Saudi Arabia
Sen	Senegal
Sey	Seychelles
Sin	Singapore
SL	Sierra Leone
Sol	Solomon Islands
Som	Somalia
Spn	Spain
Sri	Sri Lanka
StK	St Kitts
StL	St Lucia
StV	St Vincent
Sud	Sudan
Sur	Surinam
Swe	Sweden
Syr	Syria
Tan	Tanzania
Tld	Thailand
Tog	Togo
Ton	Tonga
TT	Trinidad and Tobago
Tun	Tunisia
Tur	Turkey
UAE	United Arab Emirates
Uga	Uganda
UK	United Kingdom
Uru	Uruguay
USA	United States of America
USSR	Union of Soviet Socialist Republics
Ven	Venezuela
VI	Virgin Islands
Vtn	Viet-Nam
YAR	Yemen Arab Republic (North)
YPDR	Yemen, People's Democratic Republic (South)
Yug	Yugoslavia
Zai	Zaire
Zam	Zambia
Zan	Zanzibar

Pennant numbers of major surface ships in numerical order

Number	*Ship's Name*	*Type*	*Country*
A 01	Ethiopia	FF	Eth
A 01	Panuco	LST	Mex
D 01	Aetos	FF	Gre
DD 01	Presidente Eloy Alfaro	DD	Ecu
E 01	Cuauhtemoc	DD	Mex
F 01	Adelaide	FFG	Aust
F 01	Dat Assawari	FFG	Lby
M 01	Alvsnabben	ML	Swe
PA 01	Dedalo	CVH	Spn
1	Tahchin	FF	Tld
1	Uruguay	FF	Uru
AOR 1	Success	AOR	Aust
B 1	Durango	FF	Mex
D 1	Hercules	DDG	Arg
FFG 1	Brooke	FFG	USA
L 1	Al Munassir	LSI	Omn
LHA 1	Tarawa	LHA	USA
LPD 1	Raleigh	LPD	USA
LST 1	Angthong	LST	Tld
P 1	Drummond	FF	Arg
02	O'Higgins	CL	Chi
A 02	Manzanillo	LST	Mex
DD 02	Moran Valverde	DD	Ecu
E 02	Cuitlahuac	DD	Mex
F 02	Canberra	FFG	Aust
M 02	Alvsborg	ML	Swe
2	Prasae	FF	Tld
2	Artigas	FF	Uru
D 2	Santisima Trinidad	DD	Arg
DDG 2	Charles F. Adams	DDG	USA
FFG 2	Ramsey	FFG	USA
LHA 2	Saipan	LHA	USA
LPD 2	Vancouver	LPD	USA
LPH 2	Iwo Jima	LPH	USA
LST 2	Chang	LST	Tld
P 2	Guerrico	FF	Arg
V 2	25 de Mayo	CVS	Arg
03	Prat	CL	Chi
D 03	Santander	DD	Col
D 03	Aegeon	AG/FF	Gre
F 03	Sydney	FFG	Aust
M 03	Visborg	ML	Swe
3	Pin Klao	FF	Tld
3	18 de Julio	FF	Uru
DDG 3	John King	DDG	USA
FFG 3	Schofield	FFG	USA
LHA 3	Belleau Wood	LHA	USA
LPH 3	Okinawa	LPH	USA
LST 3	Pangan	LST	Tld
P 3	Granville	FF	Arg
04	Latorre	CL	Chi
M 04	Carlskrona	ML	Swe
C 4	General Belgrano	CL	Arg
DDG 4	Lawrence	DDG	USA
FFG 4	Talbot	FFG	USA
LHA 4	Nassau	LHA	USA
LPD 4	Austin	LPD	USA
LST 4	Lanta	LST	Tld
PF 4	Rajah Lakandula	FF	Plp
Q 4	General San Martin	AG	Arg
B 05	Tehuantepec	FF	Mex
D 05	Veinte de Julio	DD	Col
R 05	Invincible	CGH	UK
5	Tapi	FF	Tld
DDG 5	Claude V. Ricketts	DDG	USA
FFG 5	Richard L. Page	FFG	USA
LHA 5	Pelileu	LHA	USA
LPD 5	Ogden	LPD	USA
LST 5	Prathong	LST	Tld
Q 5	Almirante Irizar	AG	Arg
06	Condell	FFG	Chi
A 06	Comodore Manuel Azueta	FF	Mex
A 06	Monowai	AGS	NZ
B 06	Usumacinta	FF	Mex
D 06	Siete de Agosto	DD	Col
D 06	Aspis	DD	Gre
R 06	Illustrious	CGH	UK
6	Khirirat	FF	Tld

Number	Ship's Name	Type	Country
DDG 6	Barney	DDG	USA
FFG 6	Julius A. Furer	FFG	USA
LPD 6	Duluth	LPD	USA
07	Almirante Lynch	FFG	Chi
B 07	Coahuila	PF	Mex
7	Makut Rajakumarn	FF	Tld
DDG 7	Henry B. Wilson	DDG	USA
E 7	President Bourguiba	FF	Tun
FFG 7	Oliver Hazard Perry	FFG	USA
LPD 7	Cleveland	LPD	USA
LPH 7	Guadalcanal	LPH	USA
PF 7	Andres Bonifacio	FF	Plp
B 08	Chihuahua	FF	Mex
R 08	Bulwark	LPH	UK
DDG 8	Lynde McCormick	DDG	USA
FFG 8	McInerney	FFG	USA
LPD 8	Dubuque	LPD	USA
PF 8	Gregorio de Pilar	FF	Plp
R 09	Ark Royal	CGH	UK
CGN 9	Long Beach	CGN	USA
DDG 9	Towers	DDG	USA
FFG 9	Wadsworth	FFG	USA
LPD 9	Denver	LPD	USA
LPH 9	Guam	LPH	USA
PF 9	Diego Silang	FF	Plp
CG 10	Albany	CG	USA
DDG 10	Sampson	DDG	USA
F 10	Aurora	FFGH	UK
FFG 10	Duncan	FFG	USA
H 10	Almirante Saldanha	AGS	Brz
L 10	Fearless	LPD	UK
LPD 10	Juneau	LPD	USA
LPH 10	Tripoli	LPH	USA
PF 10	Francisco Dagohoy	FF	Plp
A 11	Minas Gerais	CVS	Brz
AGF 11	Coronado	AGF	USA
BP 11	Teide	AOR	Spn
CG 11	Chicago	CG	USA
D 11	Vampire	DD	Aust
DDG 11	Sellers	DDG	USA
F 11	Jamuna	FF (survey)	Ind
F 11	Almirante Clemente	FF	Ven
FFG 11	Clark	FFG	USA
L 11	Magar	LST	Ind
L 11	Velasco	LST	Spn
L 11	Intrepid	LPD	UK
LPH 11	New Orleans	LPH	USA
R 11	Vikrant	CVS	Ind
CVS 12	Hornet	CVS	USA
D 12	Kent	DLGH	UK
DDG 12	Robison	DDG	USA
F 12	Achilles	FFGH	UK
F 12	General José Trinidad Moran	FF	Ven
FFG 12	George Philip	FFG	USA
L 12	Martin Alvarez	LST	Spn
LPD 12	Shreveport	LPD	USA
LPH 12	Inchon	LPH	USA
R 12	Hermes	LPH	UK
DDG 13	Hoel	DDG	USA
FFG 13	Samuel Eliot Morison	FFG	USA
L 13	Conde de Venadito	LST	Spn
LPD 13	Nashville	LPD	USA
14	Blanco Encalada	DD	Chi
A 14	Amba	AS	Ind
DDG 14	Buchanan	DDG	USA
FFG 14	Sides	FFG	USA
LPD 14	Trenton	LPD	USA
15	Cochrane	DD	Chi
DDG 15	Berkeley	DDG	USA
F 15	Euryalus	FFGH	UK
FFG 15	Estocin	FFG	USA
LPD 15	Ponce	LPD	USA
16	Ministro Zenteno	DD	Chi
AVT 16	Lexington	AVT	USA
CG 16	Leahy	CG	USA
D 16	Velos	DD	Gre
D 16	London	DLGH	UK
DDG 16	Joseph Strauss	DDG	USA
DE 16	Boyaca	FF	Col
F 16	Umar Farooq	FF	Ban
F 16	Diomede	FFGH	UK
FFG 16	Clifton Sprague	FFG	USA
17	Ministro Portales	DD	Chi
A 17	Otomi	PF	Mex
CG 17	Harry E. Yarnell	CG	USA
DDG 17	Conyngham	DDG	USA
F 17	Ali Haider	FF	Ban
18	Almirante Riveros	DDG	Chi
A 18	Yaqui	PF	Mex
CG 18	Worden	CG	USA
D 18	Antrim	DLGH	UK
DDG 18	Semmes	DDG	USA
F 18	Galatea	FFGH	UK
J 18	Halland	DD	Swe
19	Almirante Williams	DDG	Chi
A 19	Seri	PF	Mex
CG 19	Dale	CG	USA
D 19	Glamorgan	DLGH	UK
DDG 19	Tattnall	DDG	USA
FFG 19	John A. Moore	FFG	USA
J 19	Småland	DD	Swe
LCC 19	Blue Ridge	LCC	USA
A 20	Cora	PF	Mex
CG 20	Richmond K. Turner	CG	USA
CVS 20	Bennington	CVS	USA
D 20	Fife	DLGH	UK
DDG 20	Goldsborough	DDG	USA
FFG 20	Antrim	FFG	USA
LCC 20	Mount Whitney	LCC	USA
CG 21	Gridley	CG	USA
D 21	Lepanto	DD	Spn
D 21	Norfolk	DLGH	UK
D 21	Carabobo	DD	Ven
DDG 21	Cochrane	DDG	USA
F 21	Mariscal Sucre	FFG	Ven
FFG 21	Flatley	FFG	USA
L 21	Castilla	APA	Spn
R 21	Melbourne	CVS	Aust
CG 22	England	CG	USA
D 22	Rosales	DD	Arg
D 22	Almirante Ferrandiz	DD	Spn
D 22	Falcon	DD	Ven
DDG 22	Benjamin Stoddert	DDG	USA
F 22	Almirante Brion	FF	Ven
FFG 22	Fahrion	FFG	USA
L 22	Aragon	APA	Spn
CG 23	Halsey	CG	USA
D 23	Almirante Domecq Garcia	DD	Arg
D 23	Almirante Valdes	DD	Spn
D 23	Bristol	DLG	UK
DDG 23	Richard E. Byrd	DDG	USA
F 23	General Urdaneta	FFG	Ven
FFG 23	Lewis B. Puller	FFG	USA
J 23	Hälsingland	DD	Swe
CG 24	Reeves	CG	USA
D 24	Almirante Storni	DD	Arg
D 24	Alcala Galiano	DD	Spn
DDG 24	Waddell	DDG	USA
F 24	Rahmat	FF	Mly
F 24	General Soublette	FFG	Ven
FFG 24	Jack Williams	FFG	USA
CGN 25	Bainbridge	CGN	USA
D 25	Segui	DD	Arg
D 25	Marcilio Diaz	DD	Brz
D 25	Jorge Juan	DD	Spn
F 25	General Salom	FFG	Ven
FFG 25	Copeland	FFG	USA
26	Serrano	PF	Chi
CG 26	Belknap	CG	USA
D 26	Bouchard	DD	Arg
D 26	Mariz e Barros	DD	Brz
F 26	Jose Felix Ribas	FFG	Ven
FFG 26	Gallery	FFG	USA
G 26	Duque de Caxais	LST	Brz
27	Orella	PF	Chi
CG 27	Josephus Daniels	CG	USA
D 27	Comodoro Py	DD	Arg
FFG 27	Mahlon S. Tinsdale	FFG	USA
CG 28	Wainwright	CG	USA
D 28	Thyella	DD	Gre
F 28	Cleopatra	FFGH	UK
FFG 28	Boone	FFG	USA
G 28	Garcia d'Avila	LST	Brz
LSD 28	Thomaston	LSD	USA
29	Uribe	PF	Chi
CG 29	Jouett	CG	USA
D 29	Piedra Buena	DD	Arg
D 29	Parana	DD	Brz
FFG 29	Stephen W. Groves	FFG	USA
LSD 29	Plymouth Rock	LSD	USA
CG 30	Horne	CG	USA
D 30	Pernambuco	DD	Brz
FFG 30	Reid	FFG	USA
LSD 30	Fort Snelling	LSD	USA
31	Kuthar	FF	Ind (CG)
CG 31	Sterett	CG	USA
CVA 31	Bon Homme Richard	CVA	USA

PENNANT LIST

Number	Ship's Name	Type	Country
D 31	Piaui	DD	Brz
D 31	Ierax	FF	Gre
DDG 31	Decatur	DDG	USA
F 31	Brahmaputra	FF	Ind
F 31	Descubierta	FF	Spn
FFG 31	Stark	FFG	USA
L 31	Galicia	LSD	Spn
LSD 31	Point Defiance	LSD	USA
R 31	Split	FFG	Yug
32	Kirpan	FF	Ind (CG)
CG 32	William H. Standley	CG	USA
D 32	Santa Catarina	DD	Brz
DDG 32	John Paul Jones	DDG	USA
F 32	Himgiri	FF	Ind
F 32	Diana	FF	Spn
FFG 32	John L. Hall	FFG	USA
LSD 32	Spiegel Grove	LSD	USA
CG 33	Fox	CG	USA
D 33	Maranhão	DD	Brz
DDG 33	Parsons	DDG	USA
F 33	Nilgiri	FF	Ind
F 33	Infanta Elena	FF	Spn
FFG 33	Jarrett	FFG	USA
LSD 33	Alamo	LSD	USA
CG 34	Biddle	CG	USA
CV 34	Oriskany	CV	USA
D 34	Mato Grosso	DD	Brz
DDG 34	Somers	DDG	USA
F 34	Dunagiri	FF	Ind
F 34	Infanta Cristina	FF	Spn
FFG 34	Aubrey Fitch	FFG	USA
LSD 34	Hermitage	LSD	USA
CGN 35	Truxtun	CGN	USA
D 35	Sergipe	DD	Brz
F 35	Udaygiri	FF	Ind
F 35	Cazadora	FF	Spn
FFG 35	Underwood	FFG	USA
LSD 35	Monticello	LSD	USA
CGN 36	California	CGN	USA
D 36	Alagoas	DD	Brz
F 36	Taragiri	FF	Ind
F 36	Vencedora	FF	Spn
LSD 36	Anchorage	LSD	USA
CGN 37	South Carolina	CGN	USA
D 37	Rio Grande do Norte	DD	Brz
DDG 37	Farragut	DDG	USA
F 37	Beas	FF	Ind
F 37	Centinela	FF	Spn
FFG 37	Crommelin	FFG	USA
LSD 37	Portland	LSD	USA
CGN 38	Virginia	CGN	USA
CVS 38	Shangri-La	CVS	USA
D 38	Perth	DDG	Aust
D 38	Espirito Santo	DD	Brz
D 38	Intrepido	FF	Spn
DDG 38	Luce	DDG	USA
F 38	Serviola	FF	Spn
F 38	Arethusa	FFGH	UK
F 38	Vindhyagiri	FF	Ind
FFG 38	Kurts	FFG	USA
LSD 38	Pensacola	LSD	USA
CGN 39	Texas	CGN	USA
D 39	Hobart	DDG	Aust
DDG 39	Macdonough	DDG	USA
F 39	Betwa	FF	Ind
F 39	Naiad	FFGH	UK
LSD 39	Mount Vernon	LSD	USA
CGN 40	Mississippi	CGN	USA
DDG 40	Coontz	DDG	USA
F 40	Niteroi	DDH	Brz
F 40	Talwar	FF	Ind
F 40	Sirius	FFGH	UK
FFG 40	Halburton	FFG	USA
LSD 40	Fort Fisher	LSD	USA
A 41	Dacca	AOR	Pak
CGN 41	Arkansas	CGN	USA
CV 41	Miway	CV	USA
D 41	Brisbane	DDG	Aust
DDG 41	King	DDG	USA
F 41	Defensora	DDH	Brz
F 41	Vincente Yanez Pinzon	FF	Spn
D 42	Roger de Lauria	DD	Spn
DDG 42	Mahan	DDG	USA
F 42	Constituição	DDH	Brz
F 42	Phoebe	FFGH	UK
Q 42	Cabo San Antonio	LST	Arg
CV 43	Coral Sea	CV	USA
D 43	Marques de la Ensenada	DD	Spn
DDG 43	Dahlgren	DDG	USA
F 43	Liberal	DDH	Brz
F 43	Trishul	FF	Ind
F 43	Torquay	FF	UK
Q 43	Candido de Lasala	LSD	Arg
DDG 44	William V. Pratt	DDG	USA
F 44	Independencia	DDH	Brz
D 45	Yarra	FF	Aust
DDG 45	Dewey	DDG	USA
F 45	União	DDH	Brz
F 45	Minerva	FFGH	UK
D 46	Parramatta	FF	Aust
DDG 46	Preble	DDG	USA
F 46	Kistna	FF	Ind
CG 47	Ticonderoga	CG	USA
F 47	Danal	FFGH	UK
D 48	Stuart	FF	Aust
D 49	Derwent	FF	Aust
A 50	Deepak	AOR	Ind
D 50	Swan	FF	Aust
L 50	Tobruk	LPD	Aust
Q 50	Cabo San Pio	LST	Arg
51	Artemiz	DD	Iran
D 51	Liniers	DD	Spn
F 51	Meliton Carvajal	FF	Per
T 51	Amazonas	LST	Ven
F 52	Manuel Villavicencio	FF	Per
F 52	Juno	FFGH	UK
D 53	Torrens	FF	Aust
A 54	Isar	AG	GFR
D 54	Leon	FF	Gre
LT 54	Agusan del Sur	LST	Plp
A 55	Lahn	AG	GFR
F 55	Waikato	FFGH	NZ
T 55	Hualcopo	LST	Ecu
A 56	Lech	AG	GFR
D 56	Lonchi	DD	Gre
F 56	Argonaut	FFGH	UK
A 57	Shakti	AOR	Ind
AL 57	Sierra Madre	LST	Plp
F 57	Andromeda	FFGH	UK
A 58	Rhein	AG	GFR
F 58	Hermione	FFGH	UK
A 59	Deutschland	CLT	GFR
CV 59	Forrestal	CV	USA
C 60	Mysore	CL	Ind
CV 60	Saratoga	CV	USA
F 60	Jupiter	FFGH	UK
61	Babr	DDG	Iran
A 61	Elbe	AG	GFR
BB 61	Iowa	BB	USA
CV 61	Ranger	CV	USA
D 61	Churruca	DD	Spn
F 61	Atrevida	FF	Spn
62	Palang	DDG	Iran
BB 62	New Jersey	BB	USA
CV 62	Independence	CV	USA
D 62	Gravina	DD	Spn
F 62	Princesa	FF	Spn
A 63	Main	AG	GFR
BB 63	Missouri	BB	USA
CV 63	Kitty Hawk	CV	USA
D 63	Navarinon	DD	Gre
D 63	Mendez Nuñez	DD	Spn
BB 64	Wisconsin	BB	USA
CV 64	Constellation	CV	USA
D 64	Langara	DD	Spn
F 64	Nautilus	FF	Spn
A 65	Saar	AG	GFR
CVN 65	Enterprise	CVN	USA
D 65	Blas de Lezo	DD	Spn
F 65	Villa de Bilbao	FF	Spn
A 66	Neckar	AG	GFR
CV 66	America	CV	USA
A 67	Mosele	AG	GFR
AR 67	Kamagong	AR	Plp
CV 67	John F. Kennedy	CV	USA
D 67	Panthir	FF	Gre
A 68	Werra	AG	GFR
CVN 68	Nimitz	CVN	USA
P 68	Arnala	FFL	Ind
A 69	Donau	AG	GFR
CVN 69	Dwight D. Eisenhower	CVN	USA
F 69	Bacchante	FFGH	UK
P 69	Androth	FFL	Ind
CVN 70	Carl Vinson	CVN	USA
F 70	Apollo	FFGH	UK
71	Saam	FF	Iran
DD 71	Castilla	DD	Per
F 71	Baleares	FFG	Spn

Number	Ship's Name	Type	Country
F 71	Scylla	FFGH	UK
72	Zaal	FF	Iran
DD 72	Guise	DD	Per
F 72	Andalucia	FFG	Spn
F 72	Ariadne	FFGH	UK
73	Rostam	FF	Iran
A 73	Moresby	AGS	Aust
DD 73	Palaçios	DDGS	Per
F 73	Cataluna	FFG	Spn
P 73	Anjadip	FFL	Ind
74	Faramarz	FF	Iran
DD 74	Ferre	DDGS	Per
F 74	Asturias	FFG	Spn
P 74	Andaman	FFL	Ind
A 75	Tidespring	AOF(L)	UK
DD 75	Garcia y Garcia	DD	Per
F 75	Extremadura	FFG	Spn
F 75	Charybdis	FFGH	UK
P 75	Amini	FFL	Ind
A 76	Tidepool	AOF(L)	UK
DD 76	Capitan Quiñones	DD	Per
F 76	Hang Tuah	FF	Mly
PF 76	Datu Kalantiaw	FF	Plp
A 77	Pearleaf	AOS	UK
DD 77	Villar	DD	Per
P 77	Kamorta	FFL	Ind
PF 77	Datu Siratuna	FF	Plp
A 78	Plumleaf	AOS	UK
P 78	Kadmath	FFL	Ind
PF 78	Rajah Humabon	FF	Plp
A 79	Appleleaf	AOF(L)	UK
P 79	Kiltan	FFL	Ind
D 80	Sheffield	DDGH	UK
P 80	Kavaratti	FFL	Ind
A 81	Brambleleaf	AOF(L)	UK
CL 81	Almirante Grau	CL	Per
P 81	Katchal	FFL	Ind
CL 82	Coronel Bolognesi	CL	Per
P 82	Kanjar	FFL	Ind
P 83	Amindivi	FFL	Ind
C 84	Babur	CL	Pak
CL 84	Aguirre	CL	Per
D 85	Sfendoni	DD	Gre
D 86	Birmingham	DDGH	UK
LT 86	Zamboanga del Sur	LST	Plp
D 87	Newcastle	DDGH	UK
F 87	Nigeria	FF	Nig
LT 87	Cotobato del Sur	LST	Plp
88	Comandante Hemmerdinger	LST	Chi
AR 88	Narra	AR	Plp
D 88	Glasgow	DDGH	UK
F 88	Broadsword	FFG	UK
89	Comandante Araya	LST	Chi
D 89	Exeter	DDGH	UK
F 89	Aradu	FF	Nig
F 89	Battleaxe	FFG	UK
D 90	Southampton	DDGH	UK
F 90	Brilliant	FFG	UK
D 91	Nottingham	DDGH	UK
F 91	Brazen	FFG	UK
D 92	Liverpool	DDGH	UK
F 92	Boxer	FFG	UK
F 93	Beaver	FFG	UK
LT 93	Mindoro Occidental	LST	Plp
LT 94	Surigao del Norte	LST	Plp
D 95	Manchester	DDGH	UK
F 95	Sutlej	FF (survey)	Ind
LT 95	Surigao del Sur	LST	Plp
D 96	Gloucester	DDGH	UK
LT 96	Maquindanao	LST	Plp
D 97	Edinburgh	DDGH	UK
LT 97	Cagayan	LST	Plp
R 97	Jeanne d'Arc	CHV	Fra
D 98	York	DDGH	UK
LT 98	Ilocos Norte	LST	Plp
R 98	Clemenceau	CVS	Fra
C 99	Blake	CL	UK
F 99	Lincoln	FF	UK
R 99	Foch	CVS	Fra
101	Ansham	DDG	CPR
DD 101	Harukaze	DD	Jap
F 101	Yarmouth	FFH	UK
102	Zhangzhun	DDG	CPR
DD 102	Yukikaze	DD	Jap
103	Jilin	DDG	CPR
DD 103	Ayanami	DD	Jap
F 103	Lowestoft	FFH	UK
104	Fuzhun	DDG	CPR
DD 104	Isonami	DD	Jap
F 104	Dido	FFGH	UK
L 104	Inouse	LST	Gre
105	"Luda" class	DDG	CPR
DD 105	Uranami	DD	Jap
106	"Luda" class	DDG	CPR
DD 106	Shikinami	DD	Jap
F 106	Brighton	FFH	UK
107	"Luda" class	DDG	CPR
DD 107	Murasame	DD	Jap
F 107	Rothesay	FFH	UK
D 108	Cardiff	DDGH	UK
DD 108	Yudachi	DD	Jap
F 108	Londonderry	FFH	UK
DD 109	Harusame	DD	Jap
F 109	Leander	FFGH	UK
DD 110	Takanami	DD	Jap
N 110	Nusret	ML	Tur
DD 111	Oonami	DD	Jap
F 111	Otago	FF	NZ
DD 112	Makinami	DD	Jap
LKA 112	Tulare	LKA	USA
DD 113	Yamagumo	DD	Jap
F 113	Falmouth	FFH	UK
LKA 113	Charleston	LKA	USA
DD 114	Makigumo	DD	Jap
F 114	Ajax	FFGH	UK
LKA 114	Durham	LKA	USA
DD 115	Asagumo	DD	Jap
F 115	Berwick	FFH	UK
LKA 115	Mobile	LKA	USA
DD 116	Minegumo	DD	Jap
L 116	Kos	LST	Gre
LKA 116	St Louis	LKA	USA
DD 117	Natsugumo	DD	Jap
LKA 117	El Paso	LKA	USA
D 118	Coventry	DDGH	UK
DD 118	Murakumo	DD	Jap
DD 119	Aokumo	DD	Jap
DD 120	Akigumo	DD	Jap
NL 120	Bayraktar	LST	Tur
DD 121	Yugumo	DD	Jap
NL 121	Çakabey	LST	Tur
A 122	Olwen	AOF (L)	UK
DD 122	Hatsuyuki	DD	Jap
A 123	Olna	AOF (L)	UK
NL 123	Sancaktar	LST	Tur
A 124	Olmeda	AOF (L)	UK
F 126	Plymouth	FFH	UK
F 127	Penelope	FFGH	UK
F 129	Rhyl	FFH	UK
130	Independencia	AG	Per
131	"Luda" class	DDG	CPR
131	Ilo	AG	Per
F 131	Nubian	FFH	UK
132	"Luda" class	DDG	CPR
132	Ibn Ouf	LST	Lby
A 133	Hecla	AGS	UK
134	Ibn Harissa	LST	Lby
CA 134	Des Moines	CA	USA
A 137	Hecate	AGS	UK
A 138	Herald	AGS	UK
A 139	Darshak	AGS	Ind
CA 139	Salem	CA	USA
141	Paita	LST	Per
DD 141	Haruna	DDH	Jap
142	Rostock	FF	GDR
142	Chimbote	LST	Per
DD 142	Hiei	DDH	Jap
143	Berlin	FF	GDR
DD 143	Shirane	DDH	Jap
A 144	Hydra	AGS	UK
DD 144	Kurama	DDGH	Jap
L 144	Syros	LST	Gre
F 145	President Pretorius	FF	SA
F 147	President Steyn	FF	SA
F 148	Taranaki	FF	NZ
F 150	President Kruger	FF	SA
152	Talara	AOR	Per
A 152	Mutiara	AGS	Mly
L 153	Nafkratoussa	LSD	Gre
L 154	Ikaria	LST	Gre
155	Parinas	AOR	Per
156	Pimentel	AOR	Per
L 157	Rodos	LST	Gre
D 160	Alamgir	DD	Pak
161	"Luda" class	DDG	CPR
D 161	Badr	DD	Pak
DD 161	Akizuki	DD	Jap
162	"Luda" class	DDG	CPR

PENNANT LIST

Number	Ship's Name	Type	Country
D 162	Jahangir	DD	Pak
DD 162	Teruzuki	DD	Jap
163	"Luda" class	DDG	CPR
DD 163	Amatsukaze	DDG	Jap
D 164	Shah Jahan	DD	Pak
DD 164	Takatsuki	DD	Jap
D 165	Tariq	DD	Pak
DD 165	Kikuzuki	DD	Jap
D 166	Taimur	DD	Pak
DD 166	Mochizuki	DD	Jap
D 167	Tughril	DD	Pak
DD 167	Nagatsuki	DD	Jap
D 168	Tippu Sultan	DD	Pak
DD 168	Tachikaze	DDG	Jap
DD 169	Asakaze	DDG	Jap
F 169	Amazon	FFGH	UK
F 170	Antelope	FFGH	UK
A 171	Endurance	AG	UK
D 171	Z 2	DD	GFR
F 171	Active	FFGH	UK
L 171	Kriti	LST	Gre
F 172	Ambuscade	FFGH	UK
L 172	Lesbos	LST	Gre
F 173	Arrow	FFGH	UK
F 174	Alacrity	FFGH	UK
D 179	Z 5	DD	GFR
D 181	Hamburg	DD	GFR
D 182	Schleswig-Holstein	DD	GFR
D 183	Bayern	DD	GFR
D 184	Hessen	DD	GFR
F 184	Ardent	FFGH	UK
D 185	Lütjens	DDG	GFR
F 185	Avenger	FFGH	UK
D 186	Mölders	DDG	GFR
D 187	Rommel	DDG	GFR
AO 195	Supply	AO	Aust
L 201	Endurance	LST	Sin
L 202	Excellence	LST	Sin
AGT 203	Jervis Bay	AGT	Aust
L 203	Intrepid	LST	Sin
204	Guilin	FF	CPR
L 204	Resolution	LST	Sin
205	Guiyang	FF	CPR
L 205	Persistence	LST	Sin
206	Saguenay	DDH	Can
206	Kunming	FF	CPR
L 206	Perseverance	LST	Sin
207	Skeena	DDH	Can
207	Chengdu	FF	CPR
209	"Jiangnan" class	FF	CPR
D 210	Themistocles	DD	Gre
D 211	Miaoulis	DD	Gre
DE 211	Isuzu	FF	Jap
D 212	Kanaris	DD	Gre
DE 212	Mogami	FF	Jap
D 213	Kontouriotis	DD	Gre
DE 213	Kitakami	FF	Jap
214	"Jiangnan" class	FF	CPR
D 214	Sachtouris	DD	Gre
DE 214	Ooi	FF	Jap
AD 215	Stalwart	AD	Aust
D 215	Tompazis	DD	Gre
DE 215	Chikugo	FF	Jap
D 216	Apostolis	DD	Gre
DE 216	Ayase	FF	Jap
DE 217	Mikuma	FF	Jap
DE 218	Tokachi	FF	Jap
A 291	Cook	AGS	Aust
DE 219	Iwase	FF	Jap
DE 220	Chitose	FF	Jap
F 220	Köln	FF	GFR
DE 221	Niyodo	FF	Jap
F 221	Emden	FF	GFR
DE 222	Teshio	FF	Jap
F 222	Augsburg	FF	GFR
DE 223	Yoshino	FF	Jap
F 223	Karlsrühe	FF	GFR
DE 224	Kumano	FF	Jap
F 224	Lübeck	FF	GFR
DE 225	Noshiro	FF	Jap
F 225	Braunschweig	FF	GFR
DE 226	Ishikari	FFG	Jap
F 226	Bremen	FFG	GFR
F 227	Niedersachsen	FF	GFR
F 228	Rheinland-Pfalz	FF	GFR
229	Ottawa	DDH	Can
F 229	Emden	FF	GFR
230	Margaree	DDH	Can
F 230	Köln	FF	GFR
231	"Jiangnan" class	FF	CPR
F 231	Karlsrühe	FF	GFR
232	"Jiangnan" class	FF	CPR
233	Fraser	DDH	Can
233	"Jiangnan" class	FF	CPR
234	Assiniboine	DDH	Can
236	Gatineau	DD	Can
A 243	Tafelberg	AOR	SA
257	Restigouche	DD	Can
258	Kootenay	DD	Can
259	Terra Nova	DD	Can
261	Mackenzie	DD	Can
A 261	Eddyfirth	DD	Can
263	Yukon	DD	Can
264	Qu'Appelle	DD	Can
265	Annapolis	DDH	Can
266	Nipigon	DDH	Can
A 268	Green Rover	AOF (S)	UK
A 269	Grey Rover	AOF (S)	UK
A 270	Blue Rover	AOF (S)	UK
A 271	Gold Rover	AOF (S)	UK
A 273	Black Rover	AOF (S)	UK
275	Warszawa	DDG	Pol
280	Iroquois	DDH	Can
281	Huron	DDH	Can
282	Athabaskan	DDH	Can
283	Algonquin	DDH	Can
F 300	Oslo	FF	Nor
F 301	Bergen	FF	Nor
F 302	Trondheim	FF	Nor
uF 303	Stavanger	FF	Nor
F 304	Narvik	FF	Nor
A 306	Dharini	AR	Ind
F 310	Sleipner	FF	Nor
F 311	Aeger	FF	Nor
A 324	Protea	AGS	SA
D 340	Istanbul	DD	Tur
F 340	Beskytteren	FFH	Den
341	Samadikun	FF	Indo
D 341	Izmir	DD	Tur
342	Martadinata	FF	Indo
343	Monginsidi	FF	Indo
D 343	Iskenderun	DD	Tur
344	Ngurah Rai	FF	Indo
A 344	Stromness	AVS/AFS	UK
D 344	Içel	DD	Tur
F 344	Bellona	PF	Den
A 345	Tarbatness	AVS/AFS	UK
D 347	Gemlik	DD	Tur
F 347	Triton	PF	Den
F 348	Hvidbjørnen	FFH	Den
D 349	Kilic Ali Pasa	DD	Tur
F 349	Vaedderen	FFH	Den
D 350	Piyak Pasa	DD	Tur
F 350	Ingolf	FFH	Den
351	Jos Sudarso	FF	Indo
D 351	M. Fevzi Cakmak	DD	Tur
F 351	Fylla	FFH	Den
D 352	Gayret	DD	Tur
F 352	Peder Skram	FF	Den
D 353	Adatepe	DD	Tur
F 353	Herluf Trolle	FF	Den
D 354	Kocatepe	DD	Tur
F 354	Niels Juel	FF	Den
D 355	Tinaztepe	DD	Tur
F 355	Olfert Fischer	FF	Den
D 356	Zafer	DD	Tur
F 356	Peter Tordenskjold	FF	Den
357	Lambung Mangkurat	FF	Indo
DM 357	Muavenet	DD	Tur
D 358	Berk	FF	Tur
D 359	Peyk	FF	Tur
360	Nuku	FF	Indo
361	Fatahillah	FF	Indo
362	Malahayati	FF	Indo
363	Nala	FF	Indo
371	Pattimura	FF	Indo
A 385	Fort Grange	AEFS	UK
A 386	Fort Auston	AEFS	UK
L 401	Ertugrul	LST	Tur
I 402	Serdar	LST	Tur
AO 411	Hamana	AOR	Jap
421	Bandar Abbas	AFS	Iran
AOE 421	Sagami	AOE	Jap
F 421	Canterbury	FFGH	NZ
422	Booshehr	AFS	Iran
431	Kharg	AOR	Iran
441	Chahbahar	AR	Iran
F 450	Elli	FF	Gre

Number	Ship's Name	Type	Country
F 451	Mella	FF	DR
462	Hayase	AG	Jap
F 471	Antonio Enes	FF	Por
F 472	Alm Pereira Da Silva	FF	Por
F 473	Alm Gago Coutinho	FF	Por
F 474	Alm Magalhaes Correa	FF	Por
F 475	Joao Coutinho	FF	Por
F 476	Jacinto Candido	FF	Por
F 477	General Pereira d'Eca	FF	Por
A 480	Resource	AEFS	UK
F 480	Comandante João Belo	FF	Por
F 481	Comandante Hermenegildo Capelo	FF	Por
F 482	Comandante Roberto Ivens	FF	Por
F 483	Comandante Sacadura Cabral	FF	Por
F 484	Augusto de Castilho	FF	Por
F 485	Honorio Barreto	FF	Por
A 486	Regent	AEFS	UK
F 486	Baptiste de Andrade	FF	Por
F 487	João Roby	FF	Por
F 488	Afonso Cerqueira	FF	Por
F 489	Oliveira E. Carmo	FF	Por
LT 500	Tarlac	LST	Plp
501	Teluk Langsa	LST	Indo
LT 501	Laguna	LST	Plp
502	Teluk Bajur	LST	Indo
LT 502	Samar Oriental	LST	Plp
503	Teluk Amboina	LST	Indo
LT 503	Lanao del Sur	LST	Plp
504	Teluk Kau	LST	Indo
LT 504	Lanao del Norte	LST	Plp
LT 505	Leyte del Sur	LST	Plp
LT 506	Davao Oriental	LST	Plp
LT 507	Benguet	LST	Plp
508	Teluk Tomini	LST	Indo
AOR 508	Provider	AOR	Can
LT 508	Aurora	LST	Plp
509	Teluk Ratai	LST	Indo
AOR 509	Protecteur	AOR	Can
LT 509	Cavite	LST	Plp
510	Teluk Saleh	LST	Indo
AOR 510	Preserver	AOR	Can
LT 510	Samar del Norte	LST	Plp
511	"Jianghu" class	FFG	CPR
511	Rashid	FF	Egy
511	Teluk Bone	LST	Indo
511	Hengam	LSL	Iran
LT 511	Cotabato del Norte	LST	Plp
512	"Jianghu" class	FFG	CPR
512	Larak	LSL	Iran
LT 512	Tawi-Tawi	LST	Plp
513	"Jianghu" class	FFG	CPR
513	Lavan	LSL	Iran
514	"Jianghu" class	FFG	CPR
514	Tonb	LSL	Iran
515	"Jianghu" class	FFG	CPR
AR 517	Yakal	AR	Plp
525	Port Said	FF	Egy
A 526	Afonso de Albuquerque	AGS	Por
A 530	Horten	AG	Nor
532	Zhongdong	FFG	CPR
533	"Jiangdong" class	FFG	CPR
C 550	Vittorio Veneto	CGH	Ita
D 550	Ardito	DDG	Ita
C 551	Giuseppe Garibaldi	CVL	Ita
D 551	Audace	DDG	Ita
F 551	Canopo	FF	Ita
C 553	Andrea Doria	DLGH	Ita
C 554	Caio Duilio	DLGH	Ita
F 554	Centauro	FF	Ita
555	Tariq	FF	Egy
F 555	Cigno	FF	Ita
D 558	Impetuoso	DD	Ita
D 559	Indomito	DD	Ita
561	Multatuli	AS	Indo
562	Dumai	AD	Indo
F 564	Lupo	FF	Ita
F 565	Sagittario	FF	Ita
F 566	Perseo	FF	Ita
F 567	Orsa	FF	Ita
D 570	Impavido	DDG	Ita
F 570	Maestrale	FF	Ita
A 571	Yuzbaşi Tolunay	AO	Tur
D 571	Intrepido	DDG	Ita
F 571	Grecale	FF	Ita
A 572	Albay Hakki Burak	AO	Tur
F 572	Libeccio	FF	Ita
A 573	Binbaşi Saadettin Gürçan	AO	Tur
F 573	Scirocco	FF	Ita
F 574	Aliseo	FF	Ita
A 575	Savarona	AG	Tur
F 575	Euro	FF	Ita
F 576	Espero	FF	Ita
F 577	Zefiro	FF	Ita
A 579	Cezayirli Gazi Hasan Pasa	AG	Tur
F 580	Alpino	FF	Ita
A 581	Onaran	AR	Tur
F 581	Carabiniere	FF	Ita
A 582	Basaran	AR	Tur
A 583	Donatan	AS	Tur
A 586	Ulkü	AG	Tur
A 588	Umur Bey	AG	Tur
F 593	Carlo Bergamini	FF	Ita
F 594	Virginio Fasan	FF	Ita
595	Teluk Mentawai	LST	Indo
F 595	Carlo Margottini	FF	Ita
D 602	Suffren	DLG	Fra
A 603	Henri Poincare	AG	Fra
D 603	Duquesne	DLG	Fra
A 607	Meuse	AOR	Fra
D 609	Aconit	DD	Fra
A 610	Ile d'Oleron	AG	Fra
D 610	Tourville	DDG	Fra
C 611	Colbert	CLG	Fra
D 611	Duguay-Trovin	DDG	Fra
D 612	De Grasse	DDG	Fra
614	Cottbus	LST	GDR
615	Tien Shan	FF	RoC
A 615	Loire	AG	Fra
A 617	Garonne	AG	Fra
A 618	Rance	AG	Fra
A 620	Jules Verne	AR	Fra
A 621	Rhin	AG	Fra
A 622	Rhône	AG	Fra
D 622	Kersaint	DDG	Fra
D 624	Bouvet	DDG	Fra
D 625	Dupetit Thouars	DDG	Fra
A 626	La Charente	AOR	Fra
D 627	Maille Brézé	DDG	Fra
D 628	Vauquelin	DDG	Fra
A 629	Durance	AOR	Fra
D 629	D'Estrées	DDG	Fra
D 630	Du Chayla	DDG	Fra
631	Seiger	LST	GDR
D 631	Casabianca	DDG	Fra
D 632	Guépratte	DDG	Fra
D 633	Duperré	DDG	Fra
634	Hoyers Werde	LST	GDR
D 635	Forbin	DDG	Fra
D 638	La Galissonière	DD	Fra
D 640	Georges Leygues	DDGH	Fra
D 641	Dupleix	DDGH	Fra
D 642	Montcalm	DDGH	Fra
D 643	Aunis	AG	Fra
666	6 October	DD	Egy
A 675	Isère	AOR	Fra
F 725	Victor Schoelcher	FF	Fra
F 726	Commandant Bory	FF	Fra
F 727	Admiral Charner	FF	Fra
F 728	Doudart de Lagrée	FF	Fra
F 729	Balny	FF	Fra
F 733	Commandant Rivière	FF	Fra
F 740	Commandant Bourdais	FF	Fra
F 748	Protet	FF	Fra
F 749	Enseigne de Vaisseau Henry	FF	Fra
A 757	D'Entrecasteaux	AGS	Fra
763	William C. Lawe	DD	USA
F 776	A'Alsacien	FF	Fra
F 778	Le Vendeen	FF	Fra
F 781	D'Estienne d'Orves	FF	Fra
F 782	Amyot d'Inville	FF	Fra
F 783	Drogou	FF	Fra
DD 784	McKean	DD	USA
F 784	Detroyat	FF	Fra
F 785	Jean Moulin	FF	Fra
F 786	Quartier Maitre Anquetil	FF	Fra
F 787	Commandant De Pimodan	FF	Fra
F 788	Seconde Maitre Le Bihan	FF	Fra
F 789	Lieutenant de Vaisseau le Henaff	FF	Fra
F 790	Lieutenant de Vaisseau Lavallée	FF	Fra
F 791	Commandant l'Herminer	FF	Fra
F 792	Premier Maitre L'Her	FF	Fra
F 793	Commandant Blaison	FF	Fra
F 794	Enseigne de Vaisseau Jacoubet	FF	Fra

Number	Ship's Name	Type	Country
F 801	Tromp	DDG	Nld
F 802	Van Speijk	FFGH	Nld
F 803	Van Galen	FFGH	Nld
F 804	Ijerk Hiddes	FFGH	Nld
F 805	Van Nes	FFGH	Nld
F 806	De Ruyter	DDG	Nld
F 807	Kortenaer	FFGH	Nld
F 808	Callenburgh	FFGH	Nld
F 809	Van Kinsbergen	FFGH	Nld
F 810	Banckert	FFGH	Nld
F 811	Piet Heyn	FFGH	Nld
F 813	Witte de With	FFGH	Nld
F 814	Isaac Sweers	FFGH	Nld
D 815	Overijssel	DD	Nld
F 815	Evertsen	FFGH	Nld
D 816	Drenthe	DD	Nld
F 816	Abraham Crijnssen	FFGH	Nld
D 818	Rotterdam	DD	Nld
821	Lu Shan	FF	RoC
DE 821	Chung Nam	FF	RoK
822	Al Zaffer	DD	Egy
APD 822	Kyong Nam	FF	RoK
APD 823	Ah San	FF	RoK
F 823	Philips van Almonde	FFGH	Nld
F 824	Bloys van Treslong	FFGH	Nld
APD 825	Ung Po	FF	RoK
F 825	Jan van Brakel	FFGH	Nld
826	Yu Shan	FF	RoC
APD 826	Kyong Puk	FF	RoK
F 826	Willem van der Zaan	FFGH	Nld
APD 827	Jonnam	FF	RoK
DD 827	Robert A. Owens	DD	USA
APD 828	Chi Ju	FF	RoK
A 832	Zuiderkruis	AOE	Nld
833	El Fateh	DD	Egy
834	Wen Shan	FF	RoC
835	Fu Shan	FF	RoC
A 835	Poolster	AOE	Nld
844	Damiet	DD	Egy
845	Chung Shan	FF	RoC
854	Hua Shan	FF	RoC
DD 862	Vogelgesang	DD	USA
DD 863	Steinaker	DD	USA
DD 864	Harold J. Ellison	DD	USA
DD 866	Cone	DD	USA
878	Tai Shan	FF	RoC
DD 886	Orleck	DD	USA
888	Suez	DD	Egy
893	Shou Shan	FF	RoC
901	Murat Reis	FF	Alg
901	Ratulangi	AS	Indo
A 906	Tydeman	AGS	Nld
F 910	Wielingen	FF	Bel
911	Sorong	AOR	Indo
DD 911	Chung Mu	DD	RoK
F 911	Westdiep	FF	Bel
DD 912	Seoul	DD	RoK
F 912	Wanderlaar	FF	Bel
DD 913	Pusan	DD	RoK
F 913	Westhinder	FF	Bel
915	Kai Yang	DD	RoC
DD 915	Chung Buk	DDH	RoK
DD 916	Jeong Buk	DDH	RoK
DD 917	Dae Gu	DDH	RoK
DD 918	Inchon	DDH	RoK
DD 919	Taejon	DDH	RoK
921	Jaya Wijaya	AR	Indo
921	Chien Yang	DD	RoC
DD 921	Kwang Ju	DDH	RoK
DD 922	Kang Won	DDH	RoC
925	Te Yang	DD	RoC
928	Po Yang	DD	RoC
DD 931	Forrest Sherman	DD	USA
932	Shen Yang	DD	RoC
DD 933	Barry	DD	USA
DD 934	Kun Yang	DD	RoC
DD 937	Davis	DD	USA
938	Liao Yang	DD	RoC
DD 938	Jonas Ingram	DD	USA
DD 940	Manley	DD	USA
DD 941	Du Pont	DD	USA
DD 942	Bigelow	DD	USA
DD 943	Blandy	DD	USA
944	Yuen Yang	DD	RoC
DD 944	Mullinnix	DD	USA
DD 945	Hull	DD	USA
DD 946	Edson	DD	USA
947	Ching Yang	DD	RoC
DD 948	Morton	DD	USA
949	Lo Yang	DD	RoC
DD 950	Richard S. Edwards	DD	USA
951	Balikpapan	AO	Indo
951	Souya	AG	Jap
DD 951	Turner Joy	DD	USA
954	Nan Yang	DD	RoC
956	Kwei Yang	DD	RoC
959	Tai Yuan	FF	RoC
A 960	Godetia	AG	Bel
A 961	Zinnia	AG	Bel
963	Fu Yang	DD	RoC
DD 963	Spruance	DD	USA
DD 964	Paul F. Foster	DD	USA
DD 965	Kincaid	DD	USA
DD 966	Hewitt	DD	USA
DD 967	Elliott	DD	USA
DD 968	Arthur W. Radford	DD	USA
DD 969	Peterson	DD	USA
DD 970	Caron	DD	USA
DD 971	David R. Ray	DD	USA
972	Huei Yang	DD	RoC
DD 972	Oldendorf	DD	USA
DD 973	John Young	DD	USA
DD 974	Comte de Grasse	DD	USA
DD 975	O'Brien	DD	USA
976	Heng Yang	DD	RoC
DD 976	Merrill	DD	USA
DD 977	Brisco	DD	USA
978	Han Yang	DD	RoC
DD 978	Stump	DD	USA
DD 979	Connolly	DD	USA
DD 980	Moosbrugger	DD	USA
981	Lao Yang	DD	RoC
DD 981	John Hancock	DD	USA
DD 982	Nicholson	DD	USA
DD 983	John Rogers	DD	USA
DD 984	Leftwich	DD	USA
DD 985	Cushing	DD	USA
986	Hsiang Yang	DD	RoC
DD 986	Harry W. Hill	DD	USA
DD 987	O'Bannon	DD	USA
988	Hua Yang	DD	RoC
DD 988	Thorn	DD	USA
DD 989	Deyo	DD	USA
DD 990	Ingersoll	DD	USA
DD 991	Fife	DD	USA
DD 992	Fletcher	DD	USA
DDG 993	Kidd	DDG	USA
DDG 994	Callaghan	DDG	USA
DDG 995	Scott	DDG	USA
DDG 996	Chandler	DDG	USA
997	An Yang	DD	RoC
1002	Burdjamhal	AOS	Indo
1006	Burudjulasad	AGS	Indo
FF 1037	Bronstein	FF	USA
FF 1038	McCloy	FF	USA
FF 1040	Garcia	FF	USA
FF 1041	Bradley	FF	USA
FF 1043	Edward McDonnell	FF	USA
FF 1044	Brumby	FF	USA
FF 1045	Davidson	FF	USA
FF 1047	Voge	FF	USA
FF 1048	Sample	FF	USA
FF 1049	Koelsch	FF	USA
FF 1050	Albert David	FF	USA
FF 1051	O'Callahan	FF	USA
FF 1052	Knox	FF	USA
FF 1053	Roark	FF	USA
FF 1054	Gray	FF	USA
FF 1055	Hepburn	FF	USA
FF 1056	Connole	FF	USA
FF 1057	Rathburne	FF	USA
FF 1058	Meyerkord	FF	USA
FF 1059	W. S. Sims	FF	USA
FF 1060	Lang	FF	USA
FF 1061	Patterson	FF	USA
FF 1062	Whipple	FF	USA
FF 1063	Reasoner	FF	USA
FF 1064	Lockwood	FF	USA
FF 1065	Stein	FF	USA
FF 1066	Marvin Shields	FF	USA
FF 1067	Francis Hammond	FF	USA
FF 1068	Vreeland	FF	USA
FF 1069	Bagley	FF	USA
FF 1070	Downes	FF	USA
FF 1071	Badger	FF	USA
FF 1072	Blakely	FF	USA
FF 1073	Robert E. Peary	FF	USA
FF 1074	Harold E. Holt	FF	USA

Number	*Ship's Name*	*Type*	*Country*
FF 1075	Trippe	FF	USA
FF 1076	Fanning	FF	USA
FF 1077	Ouellet	FF	USA
FF 1078	Joseph Hewes	FF	USA
FF 1079	Bowen	FF	USA
FF 1080	Paul	FF	USA
FF 1081	Aylwin	FF	USA
FF 1082	Elmer Montgomery	FF	USA
FF 1083	Cook	FF	USA
FF 1084	McCandless	FF	USA
FF 1085	Donald B. Beary	FF	USA
FF 1086	Brewton	FF	USA
FF 1087	Kirk	FF	USA
FF 1088	Barbey	FF	USA
FF 1089	Jesse L. Brown	FF	USA
FF 1090	Ainsworth	FF	USA
FF 1091	Miller	FF	USA
FF 1092	Thomas C. Hart	FF	USA
FF 1093	Capodanno	FF	USA
FF 1094	Pharris	FF	USA
FF 1095	Truett	FF	USA
FF 1096	Valdez	FF	USA
FF 1097	Moinester	FF	USA
FF 1098	Glover	FF	USA
LST 1173	Suffolk County	LST	USA
LST 1177	Lorain County	LST	USA
LST 1178	Wood County	LST	USA
LST 1179	Newport	LST	USA
LST 1180	Manitowoc	LST	USA
LST 1181	Sumter	LST	USA
LST 1182	Fresno	LST	USA
LST 1183	Peoria	LST	USA
LST 1184	Frederick	LST	USA
LST 1185	Schenectady	LST	USA
LST 1186	Cayuga	LST	USA
LST 1187	Tuscaloosa	LST	USA
LST 1188	Saginaw	LST	USA
LST 1189	San Bernardino	LST	USA
LST 1190	Boulder	LST	USA
LST 1191	Racine	LST	USA
LST 1192	Spartanburg County	LST	USA
LST 1193	Fairfax County	LST	USA
LST 1194	La Moure County	LST	USA
LST 1195	Barbour County	LST	USA
LST 1196	Harlan County	LST	USA
LST 1197	Barnstable County	LST	USA
LST 1198	Bristol County	LST	USA
LST 1312	Ambe	LST	Nig
LST 1313	Ofiom	LST	Nig
A 1500	Sri Langkawi	LST	Mly
A 1501	Sri Banggi	LST	Mly
A 1502	Rajah Jarom	LST	Mly
A 1503	Sri Indera Sakti	LSL	Mly
L 3004	Sir Bedivere	LSL	UK
L 3005	Sir Calahad	LSL	UK
L 3027	Sir Geraint	LSL	UK
L 3029	Sir Lancelot	LSL	UK
L 3036	Sir Percivale	LSL	UK
3501	Katori	AG	Jap
L 3505	Sir Tristram	LSL	UK
4101	Atsumi	LST	Jap
4102	Motobu	LST	Jap
4103	Nemuro	LST	Jap
4151	Miura	LST	Jap
4152	Ojika	LST	Jap
4153	Satsuma	LST	Jap
ATS 4201	Azuma	ATS	Jap
5001	Fuji	AG	Jap
AGS 5102	Futami	AGS	Jap
A 5206	São Gabriel	AOR	Por
A 5303	Ammiraglio Magnaghi	AGS	Ita
A 5309	Anteo	ARS	Ita
A 5310	Proteo	ARS	Ita
A 5327	Stromboli	AOR	Ita
A 5329	Vesuvio	AOR	Ita
L 9021	Ouragan	TCD	Fra
L 9022	Orage	TCD	Fra
L 9871	Andrea Bafile	AG	Ita
L 9890	Grado	LST	Ita
L 9891	Caorle	LST	Ita

RECOGNITION SILHOUETTES

The following silhouettes are not to scale but are arranged in an order which is designed to make it easier to differentiate between the various classes; eg. ships with two funnels, ships with an island and no visible funnels, ships with one funnel and massive bridge-structure.

NIMITZ, "NIMITZ" Class CVN — USA (2+1+1)

ENTERPRISE, "ENTERPRISE" Class CVN — USA (1)

JOHN F. KENNEDY, "JOHN F. KENNEDY" Class CV — USA (1)

KITTY HAWK, "KITTY HAWK" Class CV — USA (3)

SARATOGA, "FORRESTAL" Class CV — USA (4)

FORRESTAL, "FORRESTAL" Class CV — USA (4)

CORAL SEA, "MIDWAY" Class CV — USA (2)

CLEMENCEAU, "CLEMENCEAU" Class CVA — Fra (2)

IWO JIMA, "IWO JIMA" Class LPH — USA (7)

MINAS GERAIS, Ex-British "COLOSSUS" Class CVS — Brz (1)

VEINTICINCO DE MAYO, Ex-British "COLOSSUS" Class CVS — Arg (1), Brz (1)

VIKRANT (before refit), Ex-British "MAJESTIC" Class CVS — Ind (1)

MELBOURNE, Ex-British "MODIFIED MAJESTIC" Class CVS — Aust (1)

HERMES CH — UK (1)

BLUE RIDGE, "BLUE RIDGE" Class LCC — USA (2)

VITTORIO VENETO CHG — Ita (1)

INVINCIBLE, "INVINCIBLE" Class CHG — UK (1+2)

NEWPORT, "NEWPORT" Class LST — USA (20)

TARAWA, "TARAWA" Class LHA — USA (5)

THOMASTON, "THOMASTON" Class LSD — USA (8)

DEDALO, "Ex-US "INDEPENDENCE" Class CVH — Spn (1)

AUSTIN, "AUSTIN" Class LPD — USA (12)

KIEV, "KIEV" Class CVHG — USSR (3+1)

ASHLAND, "ASHLAND" Class LSD — RoC (1)

MOSKVA, "MOSKVA" Class CHG — USSR (2)

JEANNE D'ARC CVH — Fra (1)

CABILDO, "CABILDO" Class LSD — Gre (1), RoC (1), Spn (1)

"KRESTA I" Class CLG — USSR (4)

FEARLESS LPD — UK (2)

VIRGINIA, "VIRGINIA" Class CGN — USA (4)

ANCHORAGE, "ANCHORAGE" Class LSD — USA (5)

CALIFORNIA, "CALIFORNIA" Class CGN — USA (2)

RALEIGH, "RALEIGH" Class LPD — USA (2)

TOURVILLE, Type "F 67" DDG — Fra (3)

KIROV, "KIROV" Class CHG — USSR (1)

SUFFREN, "SUFFREN" Class DLG — Fra (2)

LONG BEACH, "LONG BEACH" Class CGN — USA (1)

DOWNES, "KNOX" Class FF — USA (46)

"KRESTA II" Class CLG — USSR (10)

BAINBRIDGE, "BAINBRIDGE" Class CGN — USA (1)

ACONIT, Type "C 65" FF — Fra (1)

AUDACE, "AUDACE" Class DDG — Ita (2)

TRUXTUN, "TRUXTUN" Class CGN — USA (1)

SALISBURY, "SALISBURY" Class FF — Ban (1), UK (1)
Chichester has no main radar.

ALBANY, "ALBANY" Class CG — USA (2)

HALLAND, "HALLAND" Class DDG — Swe (2)

WAINWRIGHT, "BELKNAP" Class CG — USA (1)

"MODIFIED HALLAND" Class DD — Col (2)

LEAHY, "LEAHY" Class CG — USA (9)

ALMIRANTE WILLIAMS, "ALMIRANTE" Class DDG — Chi (2)

GEORGE LEYGUES, Type "C 70" (A/S) DDG — Fra (2+4+(2))

FERRÉ, Ex-British "DARING" Class DDG — Per (2)

TAKATSUKI, "TAKATSUKI" Class DD — Jap (4)

"MODIFIED COLONY" Class — Ind (1), Per (1)

Ex-British "MODIFIED DIDO" Class — Pak (1)

"ALLEN M. SUMNER (FRAM II)" Class DD, DDG
Arg (2), Brz (4), Chi (2), Col (1), Gre (1), RoK (2), Tur (1), Ven (1)

"FRIESLAND" Class DD — Nld (3), Per (3)

"ALLEN M. SUMNER" Class DD — Arg (1), Brz (1), RoC (8), Ven (1)

GARCIA y GARCIA, Ex-Netherlands "HOLLAND" Class DD — Per (1)

"GEARING (FRAM I)" Class DD — Brz (1), Gre (5), Spn (5), Tur (6)

Type "T 47" (ASW) DD — Fra (5)

"GEARING (FRAM I)" Class DD — Brz (1), Spn (1), USA (7)

PROVIDENCE CG — USA (1)

"GEARING (FRAM II)" Class DD — Arg (1), Gre (1), RoK (2)

DANG YANG, Ex-US "GEARING (FRAM I and II)" Class DD — RoC (11)

"GEARING (FRAM II)" Class DD — Tur (2)

"ALLEN M. SUMNER (FRAM II)" Class DDG — Iran (2)

"GEARING (FRAM II)" Class DD — RoC (1)

"FLETCHER" Class DD (5 gun type) Brz (4), Mex (2), RoK (3), Spn (1)

"FLETCHER" Class DD (4 gun type)
Arg (2), Brz (1), Chi (2), GFR (2), Gre (6), Per (1), Spn (3)

IMPETUOSO, "IMPETUOSO" Class DD Ita (2)

ANDREA DORIA, "ANDREA DORIA" Class DLG Ita (2)

BROOKLYN, "BROOKLYN" Class CL Arg (1), Chi (2)

AYANAMI, "AYANAMI" Class DD Jap (7)

SAMADIKUN, "CLAUD JONES" Class FF Indo (4)

"KYNDA" Class CLG USSR (4)

BRISTOL Type "82" DLG UK (1)

"COUNTY" Class DLGH (Exocet) UK (4)

"COUNTY" Class DLGH (Exocet) UK (1)

PEDER SKRAM, "PEDER SKRAM" Class FF Den (2)

"ÖSTERGÖTLAND" Class DD Swe (1)

"KANIN" Class DDG USSR (8)

"SAM KOTLIN" Class DDG — Pol (1), USSR (8)

HAMBURG, "HAMBURG" Class DD — GFR (4)

FARRAGUT, "COONTZ" Class DDG — USA (10)

MURASAME, "MURASAME" Class DD — Jap (3)

DECATUR, Converted "FOREST SHERMAN" and "HULL" Classes DDG — USA (4)

YAMAGUMO, "YAMAGUMO" Class DD — Jap (6)

"SPRUANCE, "SPRUANCE" Class DD — USA (30+1)

VAMPIRE, "DARING" Class DD — Aust (1)

Type "47" DDG — Fra (4)

BARRY, "FORREST SHERMAN" and "HULL" Classes (ASW modified) DD — USA (8)

DUPERRE, Type "T 53" (modified ASW) DD — Fra (1)

"MODIFIED KILDIN" Class DDG — USSR (3)

Type "53" DDG — Fra (1)

"KILDIN" Class DDG — USSR (1)

"MODIFIED KOTLIN" Class DD — USSR (12)

"KOTLIN" Class DD — USSR (6)

"KASHIN" Class DLG — USSR (13)

"MODIFIED KASHIN" Class DLG — USSR (6)

IMPAVIDO, "IMPAVIDO" Class DDG — Ita (2)

ALMIRANTE GRAU, Ex-Netherlands "DE RUYTER" Class CL
(*Aguirre* differs) — Per (2)

AKIZUKI, "AKIZUKI" Class DD — Jap (2)

"SVERDLOV" Class CL — USSR (9)

DZERZHINSKI, "SVERDLOV" Class — USSR (1)

ADMIRAL SENYAVIN, "SVERDLOV" Class CC — USSR (1)

"SKORY" Class DD — Egy (3), USSR (24)

"MODIFIED SKORY" Class DD — Egy (1), USSR (6)

LATORRE, Ex-Swedish "GOTA LEJON" Class — Chi (1)

"CARPENTER" Class DD — USA (1)

"LUDA" Class DDG — CPR (8+6)

CENTAURO, "CENTAURO" Class FF — Ita (3)

AMATSUKAZE, "AMATSUKAZE" Class DDG — Jap (1)

"CHARLES F. ADAMS" Class DDG — Aust (3), USA (23)
("PERTH" Class similar with deck-house between funnels)

LA GALISSIONIERE Type "T 56" DDH — Fra (1)

LUTJENS, "MODIFIED CHARLES F. ADAMS" Class DDG — GFR (3)

"AUDAZ" Class FF — Spn (1)

TROMP, "TROMP" Class DDGH — Nld (2)

LINIERS, "ALAVA" Class DD — Spn (1)

ARTEMIZ, Ex-British "BATTLE" Class DDG — Iran (1)

ROGER DE LAURIA, "ROGER DE LAURIA" Class DD — Spn (2)

BROADSWORD, "BROADSWORD" Class Type "22" FFGH — UK (3+3)

HARUKAZE, "HARUKAZE" Class DD — Jap (2)

"LEANDER BROAD-BEAMED" Class FFGH — UK (10)

"LEANDER" Class FFH (Ikara) UK (8)

NITEROI, "NITEROI" Class DDH (GP version) Brz (2)

"LEANDER" Class FFGH (Exocet) UK (8)

DAT-ASSAWARI, Vosper Thornycroft Mk 7 FF Lby (1)

CONDELL, British "LEANDER" Class FFG Chi (2)

RAHMAT, Yarrow Type FF Mly (1)

SWAN, "RIVER" Class FF Aust (2)

MAKUT RAJAKUMARN, Yarrow Type FF Tld (1)

SHEFFIELD, "SHEFFIELD" Class Type "42" DDGH Arg (2), UK (8+6)

SAAM, "SAAM" Class FFG Iran (4)

KATORI AGFF Jap (1)

AMAZON, "AMAZON" Class Type "21" FFG UK (8)

TUAH FF Mly (1)

"MODIFIED ROTHESAY" Class FFH UK (9 including 1 trials ship)

TORQUAY, "WHITBY" Class Type "12" FF — UK (1)

MACKENZIE, "MACKENZIE" Class DD — Can (4)

OTAGO, "ROTHESAY" Class FF — NZ (2)

British "BLACKWOOD" Class Type "14" FF — Ind (2)

PRESIDENT KRUGER, "PRESIDENT" Class FF — SA (3)

"OLIVER HAZARD PERRY" Class FFG Aust (2+2), Spn (0+3), USA (9+30+(7))

"KARA" Class CLG — USSR (7)

"KRIVAK 1" Class DDG — USSR (19)

"JIANGDON" Class FFG — CPR (2+2(?))

FRASER, "ST. LAURENT" Class DDH — Can (6)

ISUZU, "ISUZU" Class FF — Jap (4)

CHAUDIERE, "RESTIGOUCHE" Class DD — Can (3)

EL FATEH, Ex-British "Z" Class DD — Egy (1)

DEUTSCHLAND, "DEUTSCHLAND" Class CLT/AG — GFR (1)

NIGERIA FF — Nig (1)

COLBERT CLG — Fra (1)

"SAVAGE" Class FF/FFR — Pip (1), Tun (1)

"LEOPARD" Class FF — Ind (3), UK (1)

LE NORMAND Type "E 52" FF — Fra (1)

STUART, "RIVER" Class FF — Aust (4)

Note: Other "RIVER" Class units differ in main mast configuration (see SWAN page 11).

CROSLEY PF — Mex (1), RoC (3), RoK (3)

MINEGUMO, "MINEGUMO" Class DD — Jap (3)

CHARLES LAWRENCE PF — Chi (3), Ecu (1), Mex (3), RoC (6), RoK (3)

"CHIKUGO" Class FF — Jap (11)

GARCIA "GARCIA" Class FF — USA (2)

ANSHAN, "ANSHAN" Class DDG — CPR (4)

GARCIA FF (with Lamps) — USA (8)

GLOVER, "GLOVER" Class FF — USA (1)

HARUNA, "HARUNA" Class DDH — Jap (2)

"BROOKE" Class FFG — USA (6)

ALPINO, "ALPINO" Class FF — Ita (2)

"BRONSTEIN" Class FF — USA (2)

KÖLN, "KÖLN" Class FF — GFR (6)

"MIRKA 1" Class FF — USSR (9)

PIETRO DE CRISTOFARO, "PIETRO DE CRISTOFARO" Class PF — Ita (4)

"KNOX" Class FF (Improved) — USA (46)

IROQUOIS, "DD 280" Class DDH — Can (4)

BALEARES, "BALEARES" F 70 Class FFG — Spn (5)

SAGUENAY, "ST LAURENT" Class DDH — Can (6)

CARLO BERGAMINI, "BERGAMINI" Class FF — Ita (3)

ANNAPOLIS, "ANNAPOLIS" Class DDH — Can (2)

"PETYA I" Class FF — USSR (10)

"PETYA II" Class FF — Ind (12), USSR (26)

"MODIFIED PETYA I" Class FF — USSR (10)

"COMANDANTE JOAO BELO" Class FF — Por (4)

"RIGA" Class FF — Bul (2), CPR (4), Indo (3), USSR (48)

"RIGA" Class FF — Fin (1)

Ex-British "CH" and "CR" Classes DD — Pak (3)

TARIK, Ex-British "BLACK SWAN" Class FF — Egy (1)

KISTNA, Ex-British "BLACK SWAN" Class FF — Ind (1)

"COURTNEY" Class FF — Col (1)

GATINEAU, "IMPROVED RESTIGOUCHE" Class DD — Can (4)

VINCENTE YANEZ PINZON, Modernised "PIZARRO" Class FF — Spn (1)

ATREVIDA, "ATREVIDA" F 60 Class FF — Spn (4)

"DEALEY" Class FF — Uru (1)

Ex-US "RUDDEROW" Class FF — RoC (1), RoK (1)

ALMIRANTE CLEMENTE, "ALMIRANTE CLEMENTE" Class FF — Ven (2)

OSLO, "OSLO" Class F/FFG — Nor (5)

JOAO COUTINHO, "JOAO COUTINHO" Class FF — Por (6)

Ex-British "HUNT" Type 1 Class FF — Egy (1)

"JIANGNAN" Class FF — CPR (5)

BERK, "BERK" Class FF — Tur (2)

ALBATROS, "ALBATROS" Class PF — Ita (4)

BAYANDOR, "PF 103" Class PF — Iran (4)

Ex-US "CANNON" Class FF — Per (1), Plp (5), Tld (1), Uru (2)

SHIP REFERENCE SECTION

ALBANIA

Ministerial

Minister of Defence:
Mehmet Shehu

Personnel

(a) 1981: Total 3 000 including 300 coastal frontier guards.
(b) Ratings on 3 years' military service.

General

Since the break with the USSR in 1961-62 the remaining Soviet craft must have been decreasing in efficiency due to lack of spares. The transfer of Chinese craft since 1965 (including missile craft in 1976-77) has provided a small nucleus of new and effective vessels, although the current strained relations between the two countries may have affected the supply of spare parts. Future needs—probably submarines and MCM vessels.

DELETIONS

Submarine

1976 1 "Whiskey" class

Light Forces

1976 6 "P 4" class
1977 2 "P 4" class
1979 1 "Kronshtadt" class, 1 "Nyryat" class

Note: 4 Ex-Chinese "Hoku" class deleted in this edition as there is no evidence for their inclusion and they may not have been transferred.

Bases

Durazzo (Durresi), Valona (Vlora), Sazan Island, Sarande, Shingjin, Paşa Liman.

Strength of the Fleet

Type	*Active*
Submarines	3
Large Patrol Craft	3
Fast Attack Craft (Torpedo)	44
Fast Attack Craft (Gun)	6
Minesweepers—Ocean	2
Minesweepers—Inshore	4
MSB	11
Tankers	4
Small Auxiliaries	approx 15

Mercantile Marine

Lloyd's Register of Shipping:
20 vessels of 56 127 tons gross.

SUBMARINES

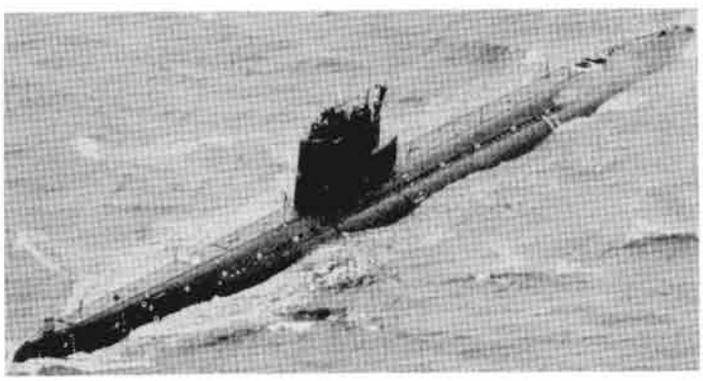
3 Ex-SOVIET "WHISKEY" CLASS

512 514 516

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 16·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); 14 torpedoes or 28 mines
Main machinery: Diesels; 4 000 bhp; 2 shafts = 18 knots surfaced;
2 electric motors; 2 700 hp = 14 knots dived
Range, miles: 13 000 at 8 knots surfaced
Complement: 54

Two of these are operational and one is now used as a harbour training boat. All are based at Vlora. Two were transferred from the USSR in 1960, and two others were reportedly seized from the USSR in mid-1961 upon the withdrawal of Soviet ships from their Albanian base. One deleted in 1976.

Radar: Snoop Plate.



"WHISKEY" Class

LIGHT FORCES

3 Ex-SOVIET "KRONSHTADT" CLASS (LARGE PATROL CRAFT)

151 341 +1

Displacement, tons: 298 standard; 330 full load
Dimensions, feet (metres): 170·6 × 21·5 × 7·2 *(52 × 6·5 × 2·2)*
Guns: 1—3·5 in *(85 mm)*; 2—37 mm (single); 6—12·7 MGs (3 vertical twin)
A/S weapons: 2 depth charge projectors; 2 DC rails; 2—5-tube rocket launchers
Main engines: 3 diesels; 3 shafts; 3 300 bhp = 21 knots
Range, miles: 1 500 at 12 knots
Complement: 50

Equipped for minelaying; two rails; about eight mines. Four were transferred from the USSR in 1958. Albania sent two for A/S updating in 1960 and two others in 1961.

Radar: Surface search: Ball Gun.
Navigation: Neptun.
IFF: High Pole.

"KRONSHTADT" Class

32 Ex-CHINESE "HU CHWAN" CLASS (FAST ATTACK HYDROFOIL—TORPEDO)

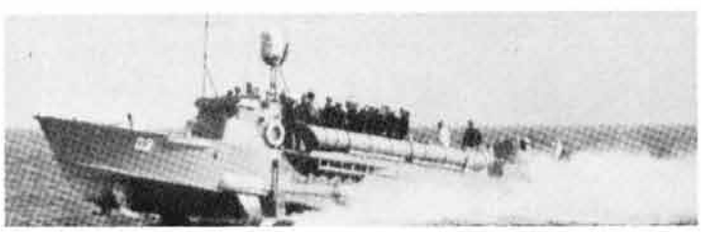
Displacement, tons: 39 full load
Dimensions, feet (metres): 71·5 × 16·6 × 3·3 (hullborne) *(21·8 × 5 × 1)*
Guns: 2—14·5 mm (twin vertical)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3 M50 diesels; 3 shafts; 3 600 hp = 55 knots (calm)
Range, miles: 500 (cruising)

Built in Shanghai and transferred as follows; six in 1968, fifteen in 1969, two in 1970, seven in 1971, two in June 1974.

Construction: Have foils forward while the stern planes on the surface.

Pennant numbers: 100 and 300 series.

Radar: Skin Head.



HU CHWAN *1972*

6 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

101-106
Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twins); 4—25 mm (twins)
A/S armament: 8 DCs
Mines: Minerails can be fitted; probably only 10 mines
Main engines: 4 diesels; 4 800 bhp = 30 knots
Complement: 25

Four transferred in mid-1974 and two in 1975.

Radar: Skin Head.

"SHANGHAI II" Class

12 Ex-CHINESE "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

111 115 304 +9

Displacement, tons: 22·5 full load
Dimensions, feet (metres): 62·7 × 11·6 × 5·6 *(19·1 × 3·5 × 1·7)*
Guns: (See notes)
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 shafts; 2 400 bhp = 40 knots
Range, miles: 400 at 30 knots
Complement: 12

Six were transferred from the USSR in 1956 (with radar and two 12·7 mm machine guns) and six from China, three in April 1965 and three in September 1965, without radar and with four 12·7 mm machine guns (two twins). Radar now fitted.

MINE WARFARE FORCES

2 Ex-SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

152 **342**

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 28·2 × 6·9 *(58 × 8·6 × 2·1)*
Guns: 4—37 mm (2 twin); 8—12·7 mm MGs
A/S weapons: 2 DCTs
Mines: Can carry 20
Main engines: 2 Type 9D diesels; 2 shafts; 2 200 bhp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Transferred in August 1960. Number 342 may have been deleted.

"T 43" Class

4 Ex-SOVIET "T 301" CLASS (MINESWEEPERS—INSHORE)

153 **343** **344** **345**

Displacement, tons: 146 standard; 160 full load
Dimensions, feet (metres): 124·7 × 16·7 × 5·2 *(38 × 5·1 × 1·6)*
Guns: 2—37 mm; 4—12·7 mm (twins)
Main engines: 3 diesels; 3 shafts; 1 440 bhp = 9 knots
Range, miles: 2 200 at 9 knots
Complement: 25

Transferred from the USSR—two in 1957, two in 1959 and two in 1960. Two deleted 1979.

11 Ex-SOVIET "PO 2" CLASS (MSB)

Displacement, tons: 50 standard; 56 full load
Dimensions, feet (metres): 70·6 × 12·5 × 3·3 *(21·6 × 3·8 × 1)*
Gun: 1—12·7 mm MG
Main engine: Diesel; 1 shaft; 300 hp = 12 knots

There are reports of some 11 "PO 2" class in service and possibly three ex-Italian "MS 501" class. The "PO 2" class, though primarily minesweeping boats, are also general utility craft. They were transferred as follows: three in 1957, three in 1958-59, five in 1960.

TANKERS

2 Ex- SOVIET "KHOBI" CLASS (PETROL TANKERS)

PATOS **SEMANI**

Displacement, tons: 800 light; 2 000 full load
Measurement, tons: 1 600 deadweight
Dimensions, feet (metres): 207 × 32·8 × 12 *(63 × 10 × 3·8)*
Main engines: 2 diesels; 1 600 bhp = 12 knots
Complement: 29

Launched in 1956. Transferred from the USSR in September 1958 and February 1959. *Semani* may be ex-Soviet M/V *Linda*.

Radar: Neptun.

1 Ex-SOVIET "TOPLIVO 1" CLASS (YARD TANKER)

Displacement, tons: 425
Dimensions, feet (metres): 115 × 22 × 9·6 *(34·5 × 6·5 × 3)*
Main engine: 1 diesel; 1 shaft = 10 knots
Range, miles: 400 at 7 knots
Complement: 16

Transferred from the USSR in March 1960. Similar to "Khobi" class in appearance though smaller. Oil fuel capacity about 200 tons.

1 Ex-SOVIET "TOPLIVO 3" CLASS (YARD TANKER)

Displacement, tons: 425

Transferred from the USSR in 1960. Generally similar to "Toplivo 1" class.

TUGS

Four small tugs are employed in local duties or harbour service.

AUXILIARIES

1 Ex-SOVIET "SEKSTAN" CLASS (DEGAUSSING SHIP)

354

Displacement, tons: 280 standard; 345 full load
Dimensions, feet (metres): 133·8 × 39·4 × 14·1 *(40·8 × 12 × 4·3)*
Main engine: 1 diesel; 400 bhp = 10 knots
Complement: 24

Built in Finland in 1956. Transferred from the USSR in 1960.

2 Ex-SOVIET "POLUCHAT 1" CLASS

SKENDERBEU A641 +1

Displacement, tons: 100 standard
Dimensions, feet (metres): 98·4 × 19·7 × 5·9 *(30 × 6 × 1·8)*
Guns: 2—14·5 mm
Main engines: 2 M50 diesels; 2 shafts; 2 400 bhp = 18 knots
Range, miles: 460 at 17 knots
Complement: 20

Probably used for torpedo recovery. Transferred in 1958.

1 Ex-SOVIET "NYRYAT" CLASS (DIVING TENDER)

Displacement, tons: 145
Dimensions, feet (metres): 93 × 18 × 5·5 *(28·4 × 5·5 × 1·7)*
Main engine: Diesel; 1 shaft; 450 hp = 12·5 knots
Range, miles: 1 600 at 10 knots
Complement: 15

Built about 1955.

Note: There are reported to be a dozen or so harbour and port tenders including a water carrier, a barrack ship and two small transports. The "Atrek" class submarine tender transferred from the USSR in 1961 as a depot ship was converted into a merchant ship. With large lakes on both the Yugoslav and Greek borders a number of small patrol craft is stationed on these lakes.

ALGERIA

Ministerial

Secretary General Ministry of Defence:
Lieutenant-Colonel Kasdi Merbah

Senior Officers

Inspector General Armed Forces:
Colonel Abdullah Belhouchet
Commander of the Navy:
Major Abderrahmane Bensalem

General

Up to now Algeria has relied on Soviet support, which is still continuing. The Italian order with Baglietto was the first move towards diversification which could be important with her patrol and fast attack craft and her minesweepers reaching well into the second half of their lives. The first order for locally built FAC-M is an important step as is the acquisition of Algeria's first frigate.

Personnel

(a) 1981: Total 3 800 (300 officers and cadets and 3 500 men)
(b) Voluntary service

Bases

Algiers, Annaba, Mers el Kebir

Strength of the Fleet

Type	*Active*
Frigate	1
Missile Corvette	1
Large Patrol Craft	6
Fast Attack Craft (Missile)	17 +4
Fast Attack Craft (Torpedo)	4
Minesweepers—Ocean	2
LCT	1
Miscellaneous	12
Coast Guard	18

Aircraft

12 Fokker F27 are operated by the Algerian Air Force (AAF) in a maritime role.

Mercantile Marine

Lloyd's Register of Shipping:
130 vessels of 1 218 621 tons gross

DELETIONS

1975 2 "P6" class
1975 *Sidi Fradj* (training ship)

FRIGATE

1 SOVIET "KONI" CLASS

MURAT REIS 901

Displacement, tons: 1 700 standard; 2 000 full load
Dimensions, feet (metres): 311·6 × 39·3 × 13·7 *(95 × 12 × 4·2)*
Missiles: SAM; 2—SA-N-4 (twin launchers)
Guns: 4—3 in *(76 mm)* (twins); 4—30 mm (twins)
A/S weapons: 2—12-barrelled MBU 6000 (fwd)
Main engines: CODAG; 1 gas turbine (centre shaft); 30 000 shp; 2 diesels (outer shafts); 12 000 shp
Speed, knots: 32 (gas); 22 (diesel)
Range, miles: 2 000 at 14 knots
Complement: 110

Delivered from Black Sea in December 1980.

Radar: Search: Strut Curve.
Fire control: Hawk Screech; Drum Tilt; Pop Group.

Sonar: Hull-mounted.

MURAT REIS *12/1980, Selçuk Emre*

MISSILE CORVETTE

1 SOVIET "NANUCHKA II" CLASS

RAS HAMIDOU 801

Displacement, tons: 780 standard; 900 full load
Dimensions, feet (metres): 197·8 × 40 × 10·2 *(60·3 × 12·2 × 3·1)*
Missiles: SSM; 4—SS-N-2B; SAM; 2—SA-N-4 (twin)
Guns: 2—57 mm
Main engines: 6—M 504 diesels; 24 000 shp; 3 shafts
Speed, knots: 30
Range, miles: 3 600 at 15 knots
Complement: 70

Delivered from Baltic July 1980. New construction. More to follow in 1981.

Radar: Search: Band Stand.
Fire control: Pop Group; Bass Tilt.
Navigation: Don.

"NANUCHKA II" Class

LIGHT FORCES

6 Ex-SOVIET "SO I" CLASS (LARGE PATROL CRAFT)

P651-656

Displacement, tons: 170 light; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (2 twin mounts)
Torpedo tubes: 2—21 in *(533 mm)* (in three craft)
A/S weapons: 4 MBU 5-barrelled rocket launchers
Mines: Can carry 12
Main engines: 3 diesels; 7 500 bhp, 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Delivered by the USSR between October 1965 and 8 October 1967. The torpedo tubes used were removed from "P 6" Fast Attack Craft.

"SO I" Class

4 ALGERIAN TYPE (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 200 approx
Dimensions, feet (metres): 131·2 × 23 × 5·9 *(40 × 7 × 1·8)*
Missiles: SSM—2, possibly Otomat
Guns: 2—76 mm OTO Melara Compact (twin)
Main engines: 2 diesels; 11 000 bhp; 2 shafts = 32 knots approx
Complement: 18

Ordered in 1979 from ONCN/CNE, Mers-el-Kebir for delivery in 1983, the first locally built craft of this type for the Algerian navy. Although of much the same size as the "Osa" class they carry a very different armament and have 12 fewer crew.

8 Ex-SOVIET "OSA II" and 3 "OSA I" CLASS (FAST ATTACK CRAFT—MISSILE)

"Osa II"—644-651
"Osa I"—641-643

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (2 twin)
Main engines: 3 M503 diesels; 12 000 bhp, ("Osa I") 15 000 bhp, ("Osa II") = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

One "Osa I" was delivered by the USSR on 7 October 1967. Two others transferred later in same year. "Osa II" transferred 1976-77 (4), fifth in September 1978, sixth in December 1978 and last pair in 1979.
All to be re-engined with MTU diesels.

"OSA I" Class

6 Ex-SOVIET "KOMAR" CLASS (FAST ATTACK CRAFT—MISSILE)

671-676

Displacement, tons: 68 standard; 81 full load
Dimensions, feet (metres): 84·2 × 21·1 × 5 *(25·7 × 6·4 × 1·5)*
Missiles: SSM; 2—SS-N-2 (single launchers)
Guns: 2—25 mm (twin)
Main engines: 4 diesels, 4 shafts, 4 800 bhp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

Acquired in 1966 from the USSR. To be re-engined with MTU diesels.

4 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

631-634

Displacement, tons: 66 standard; 75 full load
Dimensions, feet (metres): 84·2 × 20 × 5 *(25·7 × 6·1 × 1·5)*
Guns: 4—25 mm (twins)
Torpedo tubes: 2—21 in (or mines or depth charges) (see notes)
Main engines: 4 diesels, 4 shafts, 4 800 bhp = 43 knots
Range, miles: 450 at 30 knots
Complement: 20

Acquired from the USSR between 1963 and 1968. Four of the original twelve retain their original armament whilst two, with tubes removed, are used for Coast Guard duties. Two others have been disarmed and are used for training while the last two are hulks. Two deleted 1975.

AMPHIBIOUS FORCES

1 Ex-SOVIET "POLNOCHNIY" CLASS (LSM)

555

Displacement, tons: 800 full load
Dimensions, feet (metres): 239·5 × 29·2 × 5·8 *(73 × 8·9 × 1·8)*
Guns: 2—30 mm
Rocket launchers: 2—140 mm
Main engines: 2 diesels; 5 000 bhp = 18 knots
Complement: 40

Transferred in August 1976.

"POLNOCHNIY" Class

MINE WARFARE FORCES

2 Ex-SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

M 521 **M 522**

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 28·2 × 6·9 *(58 × 8·6 × 2·1)*
Guns: 2—45 mm (singles)
A/S weapons: 2 DCTs
Mines: Can carry 30
Main engines: 2 Type 9D diesels; 2 shafts; 2 200 bhp = 14 knots
Range, miles: 1 600 at 10 knots
Complement: 65

Transferred in 1968.

MISCELLANEOUS

1 Ex-SOVIET "POLUCHAT" CLASS

A 641

Operates as TRV.

2 Ex-SOVIET "P 6" CLASS

Used for training. Disarmed. See Light Forces section for details.

1 Ex-SOVIET "SEKSTAN" CLASS

MASISA A 640

Transferred in 1964. Was used as survey ship. Now probably a hulk.

1 DEGAUSSING SHIP

VASISA

Of unknown class but could be a second "Sekstan".

1 Ex-SOVIET "NYRYAT" CLASS

YAVDEZAN VP 650

Displacement, tons: 145
Dimensions, feet (metres): 93 × 18 × 5·5 *(28·4 × 5·5 × 1·7)*
Main engine: Diesel; 1 shaft; 450 hp = 12·5 knots
Range, miles: 1 600 at 10 knots
Complement: 15

Transferred in 1965. Used as diving tender. Built about 1955.

6 FISHERY PROTECTION CRAFT

JEBEL ANTAR **JEBEL HANDA** +4

COAST GUARD

2 Ex-SOVIET "P 6" CLASS

Torpedo tubes removed. See Light Forces section for details.

6 BAGLIETTO "TYPE GEMINI 36"

OMBRINE GC 223 **REQUIN** GC 331 **MARSOUIN** GC 333
DORADE GC 224 **ESPADON** GC 332 **MURÈNE** GC 334

Displacement, tons: 85
Dimensions, feet (metres): 98·4 × 19 × 7·2 *(30 × 5·8 × 2·2)*
Guns: Can carry 1—40 mm Breda Bofors and 1—20 mm
Main engines: 3 MTU diesels; 4 000 shp = 32·5 knots
Range, miles: 500 cruising
Complement: 14

First delivered early 1977 by Baglietto, Varazze, Italy.

10 BAGLIETTO "TYPE 20 GC"

GC 100 **GC 113** **GC 221** **GC 235** **GC 237**
GC 112 **GC 114** **GC 222** **GC 236** **GC 325**

Displacement, tons: 44 full load
Dimensions, feet (metres): 66·9 × 17·1 × 5·5 *(20·4 × 5·2 × 1·7)*
Gun: 1—20 mm
Main engines: 2 CRM 18DS 2 diesels; 2 660 bhp; 2 shafts = 36 knots
Range, miles: 445 at 20 knots
Complement: 11

The first pair delivered by Baglietto, Varazze in August 1976 and the remainder in pairs at two monthly intervals. Fitted with three radar sets and optical fire control.
The design of this craft is by Rodriguez with Baglietto as lead building yard.

Baglietto "20 GC" Craft *1978, Baglietto*

ANGOLA

Ministerial

Minister of Defence:
Colonel Pedro Maria Tonha

Senior Officer

Commander of the Navy:
Commandant Fnu Ervedoso

General

A number of Portuguese ships was transferred at independence in 1975, and these have been reinforced by ex-Soviet craft and ships taken up from trade. Angolan names are not known—the details given are in all cases Portuguese. In the confused state of affairs existing in Angola it is impossible to assess the availability of the craft listed.
There is a critical shortage of trained personnel. There are minor repair facilities at Luanda and Lobito—maintenance depends largely on Soviet and Cuban technicians.

Personnel

(a) 1981: 1 500
(b) Voluntary service

Training

A certain amount of training was carried out by the Portuguese before independence. At present some officers are trained in the USSR, a small Portuguese team remains, and a Nigerian team is co-operating with Cuban and Soviet advisers.

Ports and Bases

Luanda, Lobito, Moçamedes. (A number of other good harbours is available on the 1 000 mile coastline.) Naval HQ at Luanda on Ilha de Luanda which is being fortified.

Strength of the Fleet

Type	*Active*
Fast Attack Craft (Torpedo)	4
Large Patrol Craft	5
Coastal Patrol Craft	7
LCTs	3
LCUs etc	5 + ?9
Auxiliaries	?8

Note: Two ex-Chinese "Shanghai II" class previously listed now deleted—probably never transferred.

Mercantile Marine

Lloyd's Register of Shipping:
35 vessels of 65 667 tons gross.

LIGHT FORCES

4 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twin)
Torpedo tubes: 4—21 in *(533 mm)* (single)
A/S weapons: 12 DCs
Main engines: 3 M503A diesels; 3 shafts; 12 000 bhp = 38 knots
Range, miles: 450 at 34 knots
Complement: 16

Built in late 1960s. First transferred December 1977, one more in December 1978, one in January 1979 and the fourth in July 1979.

Radar: Search: Pot Drum.
Fire control: Drum Tilt.
IFF: High Pole and Square Head.

"SHERSHEN" Class *1977*

5 Ex-PORTUGUESE "ARGOS" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned (Portugal)*
Ex-**LIRA**	P 361	Estaleiros Navais de Viano do Castelo	1963
Ex-**ORION**	P 362	Estaleiros Navais de Viano do Castelo	1964
Ex-**ESCORPIAO**	P 375	Arsenal do Alfeite, Lisbon	1964
Ex-**PEGASO**	P 379	Estaleiros Navais de Viano do Castelo	1963
Ex-**CENTAURO**	P1130	Arsenal do Alfeite, Lisbon	1965

Displacement, tons: 180 standard; 210 full load
Dimensions, feet (metres): 136·8 × 20·5 × 7 *(41·6 × 6·2 × 2·2)*
Guns: 2—40 mm
Main engines: 2 Maybach (MTU) diesels; 1 200 bhp = 17 knots
Oil fuel, tons: 16
Complement: 24 (2 officers, 22 men)

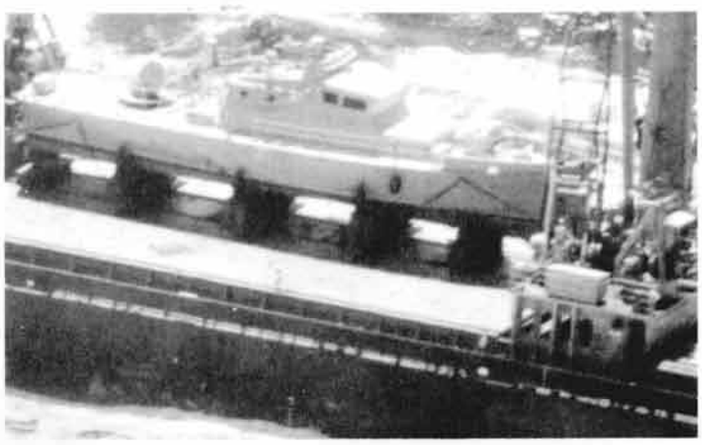
Argos and *Dragao* of same class transferred, reportedly, for spares.

"ARGOS" Class *Portuguese Navy*

1 Ex-SOVIET "ZHUK" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 50 standard; 60 full load
Dimensions, feet (metres): 75 × 16 × 6 *(24·6 × 5·2 × 1·9)*
Guns: 2—14·5 mm (twin, fwd); 1—12·7 mm (aft)
Main engines: 2 M50 diesels; 2 shafts; 2 400 hp = 34 knots
Complement: 17

Transferred February 1977.



"ZHUK" Class (on transport)

2 Ex-SOVIET "POLUCHAT" CLASS (COASTAL PATROL CRAFT)

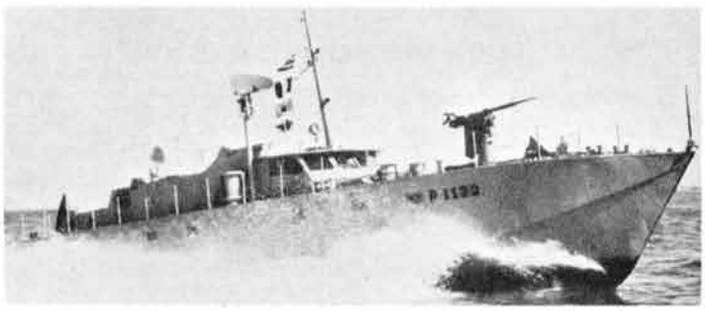
Displacement, tons: 100 full load
Dimensions, feet (metres): 98·4 × 19·7 × 5·9 *(30 × 6 × 1·8)*
Guns: 2—14·5 mm
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 18 knots
Range, miles: 460 at 17 knots
Complement: 20

Transferred December 1979.

2 Ex-PORTUGUESE "JUPITER" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned (Portugal)*
Ex-**VENUS**	P 1133	Estaleiros Navais do Mondego	1965
Ex-**MARTE** (?)	P 1134	Estaleiros Navais do Mondego	1965

Displacement, tons: 32 standard; 43·5 full load
Dimensions, feet (metres): 69 × 16·5 × 4·3 *(21 × 5 × 1·3)*
Gun: 1—20 mm Oerlikon
Main engines: 2 Cummins diesels; 1 270 bhp = 20 knots
Complement: 8

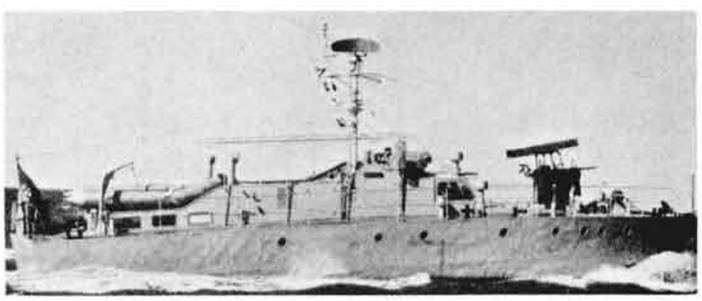


"JUPITER" Class *Portuguese Navy*

4 Ex-PORTUGUESE "BELLATRIX" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned (Portugal)*
Ex-**FOMALHAUT**	P 367	Bayerische Schiffbaugesellschaft	1961
Ex-**POLLUX**	P 368	Bayerische Schiffbaugesellschaft	1961
Ex-**ALTAIR**	P 377	Bayerische Schiffbaugesellschaft	1962
Ex-**RIGEL**	P 378	Bayerische Schiffbaugesellschaft	1962

Displacement, tons: 23 standard; 27·6 full load
Dimensions, feet (metres): 68 × 16·2 × 4 *(20·7 × 5·1 × 1·2)*
Gun: 1—20 mm Oerlikon
Main engines: 2 Cummins diesels; 470 bhp = 15 knots
Complement: 7 (1 officer, 6 men)



"BELLATRIX" Class *Portuguese Navy*

AMPHIBIOUS FORCES

Note: In addition to those below five ex-Soviet "T-4" class LCMs reported transferred in 1976 and up to nine ex-Portuguese LCMs and LCVPs reported although these may be in a poor state.

1 Ex-PORTUGUESE "ALFANGE" CLASS (LCT)

Name	*No.*	*Builders*	*Commissioned (Portugal)*
Ex-**ALFANGE**	LDG 101	Estaleiros Navais do Mondego	1965

Displacement, tons: 500
Dimensions, feet (metres): 187 × 39 × 6·2 *(57 × 12 × 1·9)*
Main engines: 2 diesels; 1 000 bhp = 11 knots
Complement: 20

Ex-ALFANGE *Portuguese Navy*

3 Ex-SOVIET "POLNOCHNIY" CLASS (LCT)

First transferred November 1977, the second 10 February 1979 and the third 11 December 1979. Type unknown although probably Type I. See USSR section for details.

MISCELLANEOUS

Note: It is also reported that the Portuguese survey ship *Carvalho Araujo* of 1 340 tons (ex-"Flower" class corvette) was transferred in 1975.

Also reported that up to eight merchant ships have been acquired from local shipping.

ANGUILLA

General

Since 1971 Anguilla has been administered by a British Commissioner separately from the Associated State of St Christopher—Nevis—Anguilla and since 1976 has had its own separate constitution like a British dependent territory. Under the charge of Joseph F. C. Francis CPM, Commissioner of Police.

Mercantile Marine

Lloyd's Register of Shipping:
4 vessels of 1 092 tons gross

1 FAIREY MARINE "HUNTSMAN" CLASS

LAPWING

A 28 ft *(8·5 m)* launch supplied in 1974. She is unarmed and used for fishery protection, anti-smuggling operations, police work and for Air-Sea Rescue.

1 FAIREY MARINE "INTERCEPTOR" CLASS

Rescue craft for Coolidge Airport. Two 280 hp outboard engines with a speed of 30 knots. Eight 25 man life-rafts. Supplied in 1978.

ARGENTINA

Headquarters' Appointments

Commander of the Navy and Chief of Naval Operations:
Vice-Admiral J. I. Anaya
Chief of Naval Staff:
Vice-Admiral A. Vañek

Diplomatic Representation

Head of Argentine Naval Mission Asunción, Paraguay:
Captain Jorge E. Maslein
Naval Attaché in Asunción, Paraguay:
Captain Carlos Robert
Naval Attaché in Bogotá:
Captain Juan Carlos Abbondanza
Naval Attaché in Bonn:
Captain Nestor O. Baricco
Naval Attaché in Brasilia:
Captain Jorge Horatio Baddaroux
Naval Attaché in Cape Town:
Rear-Admiral Rubén Chamorro
Naval Attaché in Caracas:
Captain Carlos Ballestero
Naval Attaché in La Paz:
Captain Miguel C. A. Pita
Head of Naval Mission, La Paz:
Captain Guillermo Enrique Estrada
Naval Attaché in London and The Hague and Head of the Argentine Naval Mission in Europe:
Rear-Admiral Rodolfo C. Luchetta
Naval Attaché in Lima:
Captain Ernesto Diamante
Naval Attaché in Madrid:
Captain Raul Rivero
Naval Attaché in Montevideo:
Captain Eduardo Raúl Invierno
Naval Attaché in Paris:
Captain Marcelo A. Linares
Naval Attaché in Quito:
Captain Domingo Ramón Negrete
Naval Attaché in Rome:
Captain Carlos Adamoli
Naval Attaché in Santiago:
Captain José Amauri Ferrer
Naval Attaché in Tokyo:
Captain Eduard Dachegui
Naval Attaché in Washington:
Rear-Admiral Carlos A. Bonino

Personnel

(a) 1981: 30 930 (2 890 officers, 16 040 petty officers and ratings and 12 000 conscripts)
Marine Corps: 6 000 officers and men
(b) Volunteers plus 14 months' national service

Note: Cuerpo de Infanteria de Marina (Marine Corps)
1st Marine Force: 2 Infantry Battalions, Group Command and Service.
1st Marine Brigade: 2 Infantry Battalions; 1 Field Artillery Battalion; 1 Service Battalion; 1 Command Battalion.
Amphibious Support Force: 1 Air Defence Battalion; 1 Communications Battalion; Amphibious craft units; Amphibious Commando Group; 1 Infantry Battalion (Independent River); 2 Security Battalions; 2 Security Companies.
Based at or near naval bases and installations. Equipped with 20 LVTP-7, 15 LARC-5, 10 "Tigercat" SAM, 105 mm howitzer, "Bantam" A-T missiles, 88 mm AA guns, 106 and 120 mm mortars, 75 mm, 105 mm recoilless rifles, 30 mm AA guns and Short Blowpipe SAM.

Naval Bases

Buenos Aires (Darsena Norte): Dockyard, 2 Dry Docks, 8 Floating Docks, 1 Floating Crane, 1 Syncrolift, Schools.
Rio Santiago (La Plata): Schools, Naval shipbuilding yard (AFNE), 1 Slipway, 1 Floating Crane.
Mar de Plata: Submarine base with slipway.
Puerto Belgrano: Main Naval Base, Schools, 2 Dry Docks, 1 Floating Dock.
Ushaia: Small naval base.

Naval Building Yards

(a) Astilleros y Fábricas Navales del Estado (AFNE) Rio Santiago.
(b) Tandanor, Darsena Norte (Planta 1) and Darsena Este (Planta 2). 88·8 per cent naval owned and 11·2 per cent by Adm. Gen. de Puertos.
Planta 1 has 2 dry docks and 3 floating docks. Planta 2 has 3 floating docks (A, B and C) and the new Syncrolift of 185 × 32 m.

Naval Aviation

16 Super Etendard*
14 A-4Q Skyhawk*
10 Aermacchi MB 326 GB
10 Aermacchi MB 339
10 S-2A/S-2E Tracker*

4 SP-2E/P-2H Neptune

10 Alouette III Helicopter*
6 Hughes 500M (Cayuse) (PNA)*
5 Sikorsky S-61D (Sea King)*
2 Sikorsky S-61 NR*
3 Sea Lynx* (+8 on order)
3 Puma (PNA)

3 Fokker F28-3000
1 HS 125 Srs. 400A
3 Lockheed L-188 Electra
5 Short Skyvan (PNA)
8 Beech Super King Air 200
5 Beech B80 Queen Air
15 Beech T-34 C-1
3 Fairchild-Hiller Porter
2 C45

*Ship-based.

Naval Air Bases

Punta Indio, Commandante Espora, Ezeiza (Buenos Aires), Trelew, Ushuaia.

Missiles

Argentina has acquired a number of Exocet missiles now fitted in "Allen M. Sumner", "Gearing", Type 42 and "A 69" classes.
Sea Dart fitted in Type 42.
Tiger Cat, Bantam and Blowpipe (Marine Corps).
AS-11 and AS-12 in helicopters.
Aim-9 Sidewinder in A-4Q Skyhawk.
Matra R550 and AM-39 in Super Etendard.
Martin Pescado in A-4Q Skyhawk and MB 326 GB.

General

With their one carrier over 30 years old, one cruiser of pre-war vintage and seven destroyers with a hull life of 32 years or more, the reported frigate programme presents no surprise. The production of more submarines, a new Harrier-Carrier programme and a new class of offshore patrol craft would seem sensible additions to the new construction plans.

Prefectura Naval Argentina (PNA)

PNA is responsible for Coast Guard and rescue duties.
A considerable building programme of 5 corvettes and 20 coastal patrol craft is under way.

Prefix to Ships' Names

ARA

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Patrol Submarines	4	1 (5)
Attack Carrier (Medium)	1	—
Cruiser	1	—
Destroyers	8	1 (3)
Frigates	3	(6)
Patrol Ships	7	—
Landing Ships (Tank)	5	—
Landing Craft (Tank)	1	—
Minor Landing Craft	23	—
Fast Attack Craft (Gun)	2	—
Fast Attack Craft (Torpedo)	2	—
Large Patrol Craft	8*	—
Minesweepers (Coastal)	4	—
Minehunters	2	—
Survey/Oceanographic Ships	3	—
Survey Launches	2	—
Transports	5	—
Tankers (Fleet Support)	3	—
Icebreakers	2	—
Training Ship	1	—
Tugs	14	—
Floating Docks	7	—

*In addition the PNA operates another 24 patrol craft.

Mercantile Marine

Lloyd's Register of Shipping:
537 vessels of 2 546 305 tons gross.

DELETIONS

Cruiser

1979 *9 de Julio*

Destroyers

1977 *Espora, Almirante Brown*
1980 *Almirante Domecq Garcia*

Corvettes

1976 *Commandante General Zapiola* grounded and lost (Nov)
1979 *Diaguita, Thompson*

Amphibious Forces

1978 *Cabo San Isidro*
1980 *Cabo San Gonzalo, Cabo San Vicente, BDI-4*

Survey Ships

1979 *Islas Orcadas* returned to USA
1980 *El Austral* (target)

Transport

1975 *San Julian*

Salvage Ship

1974 *Guardiamarina Zicari*

Tugs

1974 *Mataco*
1979 *Huarpe*
1980 *Toba*

PENNANT LIST

Submarines

S 21	Santa Fe
S 22	Santiago del Estero
S 31	Salta
S 32	San Luis

Aircraft Carrier

V 2	Veinticinco de Mayo

Cruiser

C 4	General Belgrano

Destroyers

D 1	Hercules
D 2	Santisima Trinidad
D 22	Rosales
D 23	Almirante Domecq Garcia
D 24	Almirante Storni
D 25	Segui
D 26	Bouchard
D 27	Comodoro Py
D 29	Piedra Buena

Frigates

P 1	Drummond
P 2	Guerrico
P 3	Granville

Patrol Ships

A 1	Com. G. Irigoyen
A 3	Francisco de Gurruchaga
A 6	Yamana
A 9	Alferez Sobral
A 10	Comodoro Somellera
P 20	Murature
P 21	King

Amphibious Forces

Q 42	Cabo San Antonio
Q 43	Candido De Lasala
Q 50	Cabo San Pio

Light Forces

P 55	Surubi
P 61	Baradero
P 62	Barrangueras
P 63	Clorinda
P 64	Concepcion del Uruguay
P 82	Alakush
P 84	Towara
P 85	Intrepida
P 86	Indomita

Mine Warfare Forces

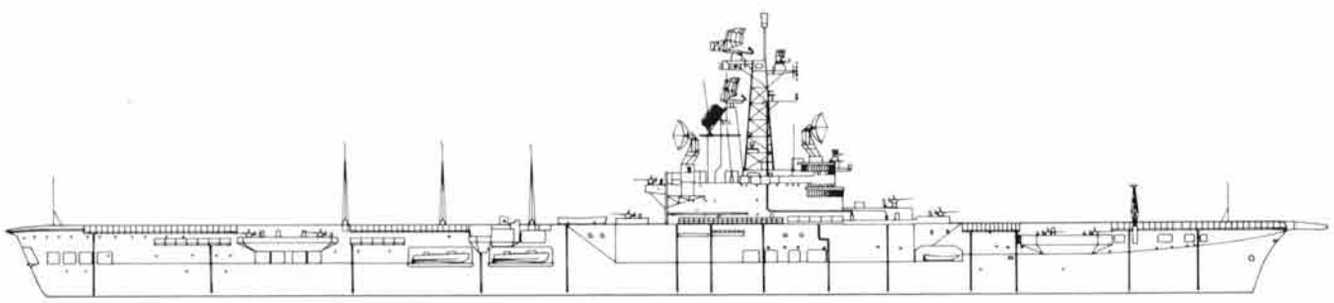
M 1	Neuquen
M 2	Rio Negro
M 3	Chubut
M 4	Tierra del Fuego
M 5	Chaco
M 6	Formosa

Miscellaneous

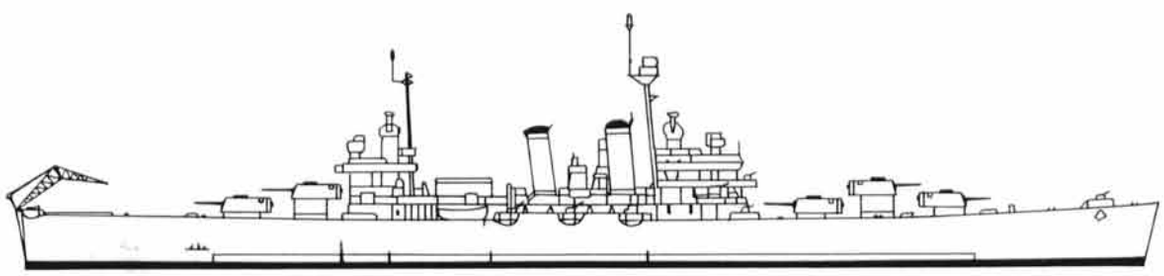
A 7	Chiriguano
A 8	Sanaviron
B 2	Bahia Aguirre
B 3	Canal Beagle
B 4	Bahia San Blas
B 5	Cabo de Hornos
B 6	Bahia Buen Suceso
B 12	Punta Alta
B 16	Punta Delgada
B 18	Punta Médanos
Q 2	Libertad
Q 4	General San Martin
Q 5	Almirante Irizar
Q 6	Bahia Paraiso
Q 8	Puerto Deseado
Q 11	Comodoro Rivadavia
Q 15	Cormoran
Q 17	Goyena
Q 72	Tequara
Q 73	Itati
Q 74	Fortuna I
R 2	Querandi
R 3	Tehuelche
R 5	Mocovi
R 6	Calchaqui
R 10	Chulupi
R 16	Capayan
R 18	Chiquillan
R 19	Morcoyan
R 29	Pehuenche
R 30	Tonocote
R 32	Quilmes
R 33	Guaycuru

Prefectura Naval Argentina

GC 12	Spiro
GC 13	Delfin
GC 21	Lynch
GC 22	Toll
GC 23	Erezcano
GC 31	Anzoategui
GC 42	Albatros
GC 43	Mandubi
GC 45	Robalo
GC 47	Tonina
GC 48-61	Patrol craft
GC 64	Mar del Plata
GC 65	Martin Garcia
GC 66	Rio Lujan
GC 67	Rio Uruguay
GC 68	Rio Paraguay
GC 69	Rio Parana
GC 70	Rio de la Plata
GC 71	La Plata
GC 72	Buenos Aires
GC 73	Cabo Corrientes
GC 74	Rio Quequen
GC 75	Bahia Blanca
GC 76	Ingeniero White
GC 77	Golfo San Matias
GC 78	Madryn
GC 79	Rio Deseado
GC 80	Ushuaia
GC 81	Canal de Beagle
GC 82	Islas Malvinas
GC 83	Rio Iguazu
GC 101	Dorado



VEINTICINCO DE MAYO *1980, Ian Sturton*



"BROOKLYN" Class

SUBMARINES

0 +1 + 3 TR 1700 TYPE

Displacement, tons: 2 100 surfaced; 2 300 surfaced
Dimensions, feet (metres): 213·2 × 23·9 × 21·3 *(65 × 7·3 × 6·5)*
Torpedo tubes: 6-21 in *(533 mm)* (bow); 16 reloads
Rocket launchers: 4
Main machinery: 4 diesel generators, 1 100 kW each; 1 main motor, 6 600 kW; 1 shaft
Speed, knots: 13 surfaced; 15 snorting; 25 dived
Range, miles: 15 000 at 5 knots surfaced
Complement: 26 (plus 6 spare berths)

Contract signed 30 November 1977 with Thyssen Nordseewerke for two submarines to be built at Emden with parts and overseeing for two more boats to be built in Argentina by Astilleros Domecq Garcia, Buenos Aires. The Government of the FDR has financially guaranteed the project. First boat due for completion 1983—second to be laid down in sections from West Germany in 1982.

Batteries: Eight 120 cells with capacities of; 1 hour, 5 850Ah; 3 hours, 7 851 Ah; 10 hours, 11 900 Ah.
Diving depth: 300 m.
Radar: Periscopic radar, IFF and ECM.
Sonar: Active, passive, intercept and underwater telephone.

0 +2 TR 1400 TYPE

Displacement, tons: 1 650 surfaced; 1 900 dived
Dimensions, feet (metres): 184·3 × 23·9 × 20·3 *(56·2 × 7·3 × 6·3)*
Torpedo tubes: 6-21 in *(533 mm)* (bow)
Rocket launchers: 4
Main machinery: 2 diesel generators, 1 100 kW each; 1 main motor, 3 700 kW; 1 shaft
Speed, knots: 11 surfaced and snorting; 21 dived
Range, miles: 13 300 at 5 knots surfaced
Complement: 26 (plus 6 spare berths)

Contract signed with Thyssen Nordseewerke for both submarines to be built by Astilleros Domecq Garcia, Buenos Aires at Planta 2 from sections supplied from West Germany. First to be operational 1984.

Batteries: Four 120 cells.
Diving depth: 300 m.
Radar: Periscopic radar, IFF and ECM.
Sonar: Active, passive, intercept and underwater telephone.

2 "SALTA" CLASS (TYPE 209/1)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SALTA	S 31	Howaldtswerke, Kiel	—	22 Nov 1972	7 Mar 1974
SAN LUIS	S 32	Howaldtswerke, Kiel	—	2 May 1973	24 May 1974

Displacement, tons: 1 185 surfaced; 1 285 dived
Dimensions, feet (metres): 183·4 × 20·5 × 17·9 *(55·9 × 6·3 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)*; bow tubes (with reloads)
Main machinery: Diesel-electric; MTU diesels, 4 generators; 1 shaft; 5 000 hp
Speed knots: 10 surfaced, 22 dived
Complement: 32

Built in sections by Howaldtswerke Deutsche Werft AG, Kiel from the IK 68 design of Ingenieurkontor, Lübeck. Sections were shipped to Argentina for assembly at Tandanor, Buenos Aires.

SALTA *1973, Argentine Navy*

2 "GUPPY (IA and II)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SANTE FE (ex-USS *Catfish* SS 339)	S 21	Electric Boat Co	6 Jan 1944	19 Nov 1944	19 Mar 1945
SANTIAGO DEL ESTERO (ex-USS *Chivo* SS 341)	S 22	Electric Boat Co	21 Feb 1944	14 Jan 1945	28 Apr 1945

Displacement, tons: 1 870 surfaced; 2 420 *(Santa Fe)*; 2 540 *(Santiago)* dived
Dimensions, feet (metres): 307·5 × 27·2 × 18 *(Santa Fe)* 17 *(Santiago) (93·7 × 8·3 × 5·5* or *5·2)*
Torpedo tubes: 10—21 in *(533 mm)*; (6 fwd, 4 aft)
Main machinery: 3 diesels; 4 800 shp; 2 electric motors; 5 400 shp; 2 shafts
Speed, knots: 18 surfaced; 15 dived
Oil fuel, tons: 300
Range, miles: 12 000 at 10 knots
Complement: 82-84

Both of the "Balao" class. *Catfish* was modified under the Guppy II programme (1948-50) and *Chivo* under the Guppy 1A programme (1951). Both transferred to Argentina at Mare Island in January 1971 by sale.

SANTIAGO DEL ESTERO *1970, Dr. Robert Scheina*

AIRCRAFT CARRIER

1 Ex-BRITISH "COLOSSUS" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
VEINTICINCO DE MAYO (ex-*HrMS Karel Doorman*, ex-*HMS Venerable*)	V 2	Cammell Laird & Co Ltd, Birkenhead	3 Dec 1942	30 Dec 1943	17 Jan 1945

Displacement, tons: 15 892 standard; 19 896 full load
Dimensions, feet (metres): 630 pp.; 693·2 oa × 80 × 25 *(192; 211·3 × 24·4 × 7·6)*
Width, feet (metres): 138·4 *(42·2)* oa
Hangar:
Length, feet (metres): 455 *(138·7)*
Width, feet (metres): 52 *(15·8)*
Height, feet (metres): 17·5 *(5·3)*
Aircraft: Operates with variable complement of S-2E Trackers, A-4Q Skyhawks, S-61D Sea King ASW helicopters and A103 Alouette helicopters. Normal total 18 fixed wing and 4 helicopters
Guns: 9—40 mm/70 (single Bofors L90)
Main engines: Parsons geared turbines; 40 000 shp; 2 shafts
Boilers: Four 3-drum; working pressure 400 psi *(28·1 kg/cm²)*; Superheat 700°F *(371°C)*
Speed, knots: 24·25
Oil fuel, tons: 3 200
Range, miles: 12 000 at 14 knots, 6 200 at 23 knots
Complement: 1 000

Purchased from the UK on 1 April 1948 and commissioned in the Royal Netherlands Navy on 28 May 1948. Damaged by boiler fire on 29 April 1968. Sold to Argentina on 15 October 1968 and refitted at Rotterdam by N. V. Dok en Werf Mij Wilton Fijenoord. Commissioned in the Argentine Navy on 12 March 1969. Completed refit on 22 August 1969 and sailed for Argentina on 1 September 1969. With modified island superstructure and bridge lattice tripod radar mast, and tall raked funnel, she differs considerably from her former appearance and from her original sister ships in the Australian, Brazilian and Indian navies.

Electronics: Fitted with Ferranti CAAIS with Plessey Super-CAAIS displays. The system has been modified to provide control of carrier based aircraft and will be capable of direct computer-to-computer radio data links with the new Type 42 destroyers.

Engineering: The turbine sets and boilers are arranged *en echelon*, the two propelling-machinery spaces having two boilers and one set of turbines in each space, on the unit system. She was reboilered in 1965-66 with boilers removed from the incomplete HMS *Leviathan*. During refit for Argentina in 1968-69 she received new turbines, also from HMS *Leviathan*.

Radar: Air surveillance: One LW-01, one LW-02.
Height finders: Two VI.
Target indicator and tactical: One DA-02.
Surface warning and navigation: One ZW-01.

VEINTICINCO DE MAYO *1980, Dr. Robert Scheina*

VEINTICINCO DE MAYO *1980, Dr. Robert Scheina*

Reconstruction: Underwent extensive refit modernisation in 1955-58 including angled flight deck and steam catapult, rebuilt island, mirror sight landing system, and new anti-aircraft battery of ten 40 mm guns, at the Wilton-Fijenoord Shipyard, at a cost of 25 million guilders. Conversion completed in July 1958. In 1980 her flight deck area was increased allowing for two extra aircraft in the deck-park.

CRUISER

1 Ex-US "BROOKLYN" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
GENERAL BELGRANO (ex-*17 de Octubre*, ex-*Phoenix*, CL 46)	C 4	New York S.B. Corporation, Camden	15 Apr 1935	12 Mar 1938	18 Mar 1939

Displacement, tons: 10 800 standard; 13 645 full load
Dimensions, feet (metres): 600 wl. 608·3 oa × 69 × 24 *(183; 185·4 × 21 × 7·3)*
Aircraft: 2 helicopters
Missiles: SAM—Estimated 70 Seacat—(2 quad launchers)
Guns: 15—6 in *(153 mm)*/47; 8—5 in *(127 mm)*/25; 2 twin—40 mm; 4—47 mm (saluting) (see Note)
Armour:
Belt 4 in—1½ in *(102–38 mm)*
Decks 3 in—2 in *(76–51 mm)*
Turrets 5 in—3 in *(127–76 mm)*
Conning Tower 8 in *(203 mm)*
Main engines: Westinghouse geared turbines; 100 000 shp; 4 shafts
Boilers: 8 Babcock & Wilcox Express type
Speed, knots: 32·5 (when new)
Range, miles: 7 600 at 15 knots
Oil fuel, tons: 2 200
Complement: 1 000

GENERAL BELGRANO *1978, Argentine Navy*

Superstructure was reduced, bulges added, beam increased, and mainmast derricks and catapults removed before transfer. Purchased from the USA in 1951 at a cost of $7·8 million and transferred to the Argentine Navy on 12 April 1951. *General Belgrano* was commissioned under the name *17 de Octubre* at Philadelphia on 17 October 1951. *17 de Octubre* was renamed *General Belgrano* in 1956 following the overthrow of President Peron the year before.

Gunnery: FCS 33 (1), FCS 34 (1), FCS 57 (2), FCS 63 (2), FCS NA9-D1, TDS (1)
Number of 20 mm reported as added.

Hangar: The hangar in the hull right aft accommodates two helicopters together with engine spares and duplicate parts, though four aircraft was the original complement.

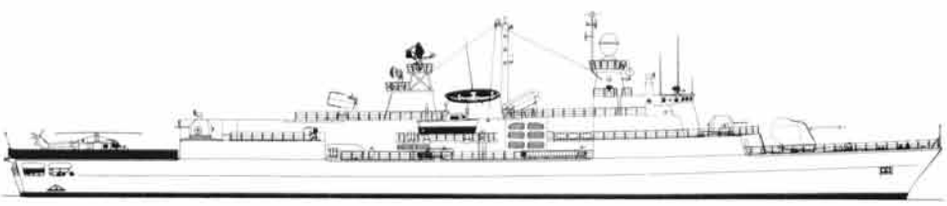
Radar: Search: LW and DA Series (Signaal).

DESTROYERS

0 + 1 + 3 MEKO 360 TYPE

Name	No.	Builders	Laid down	Launched	Commissioned
ALMIRANTE BROWN	—	Blohm and Voss	8 Sep 1980	—	1983

Displacement, tons: 3 600
Dimensions, feet (metres): 413·1 × 49·3 × 19 (screws) *(125·9 × 15 × 5·8)*
Aircraft: 2 Lynx helicopters
Missiles: SSM; 8—MM40 (2 quad launchers); SAM; 8—Aspide (Octuple launcher)
Guns: 1—5 in *(127mm)*; 4 twin 40/70 Breda Bofors
A/S weapons: 6—Ilas-3 (2 triple) torpedo tubes
Rocket launchers: 2—Elsag 105 mm SCLAR
Main engines: 2 Rolls-Royce Olympus TM3B gas turbines; 2 Rolls-Royce Tyne RM1C gas turbines; 56 000 shp and 10 680 shp; cp propellers; 2 shafts
Speed, knots: 30·5 (20·5 cruising)
Range, miles: 4 500 at 18 knots
Complement: 196



MEKO 360 Type

On 11 December 1978 the Argentine Navy signed an agreement with Thyssen Rheinstahl/Blohm and Voss for this class to be built in West Germany. The first ship is to be delivered in 38 months.
Previous reports of a larger order, some ships being built in Argentina, are apparently incorrect.

Equipment: Breda Chaff/IR rocket launcher; ECM; optronic director; digital computer and data processing system.

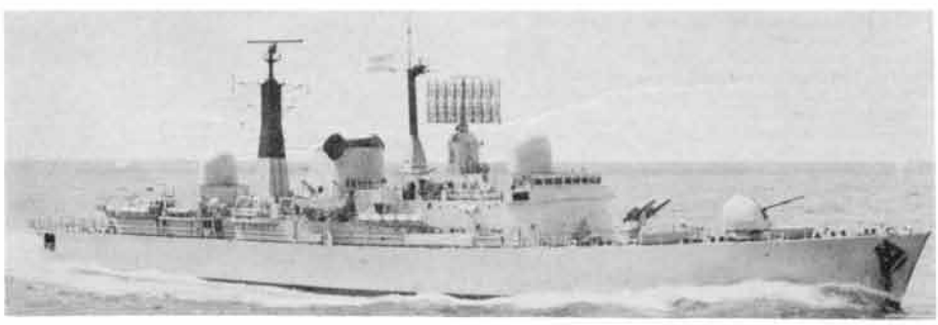
Radar: Air and Surface surveillance: HSA DA-08A
Fire control: WM25 with STIR.
Navigation: One HSA ZW-06.

Sonar: KAE 80 hull-mounted.

2 BRITISH TYPE 42

Name	No.	Builders	Laid down	Launched	Commissioned
HERCULES	D 1 (ex-28)	Vickers, Barrow	16 June1971	24 Oct 1972	12 July 1976
SANTISIMA TRINIDAD	D 2	AFNE, Rio Santiago	11 Oct 1971	9 Nov 1974	July 1981

Displacement, tons: 3 150 standard; 4 100 full load
Dimensions, feet (metres): 410 × 47 × 19 (screws) *(125 × 14·3 × 5·8)*
Aircraft: 1 Lynx helicopter
Missiles: SSM; 4—Exocet (single launchers); SAM; Sea Dart (1 twin launcher—22 missiles)
Guns: 1—4·5 in/55 Vickers Mk 8; 2—20 mm Oerlikon Mk 7
A/S weapons: 6—Mk 32 (2 triple) torpedo tubes
Main engines: Rolls-Royce Olympus gas turbines for full power; Rolls-Royce Tyne gas turbines for cruising; 2 shafts; 50 000 shp
Speed, knots: 30
Range, miles: 4 000 at 18 knots
Complement: 300



HERCULES *1978, Argentine Navy*

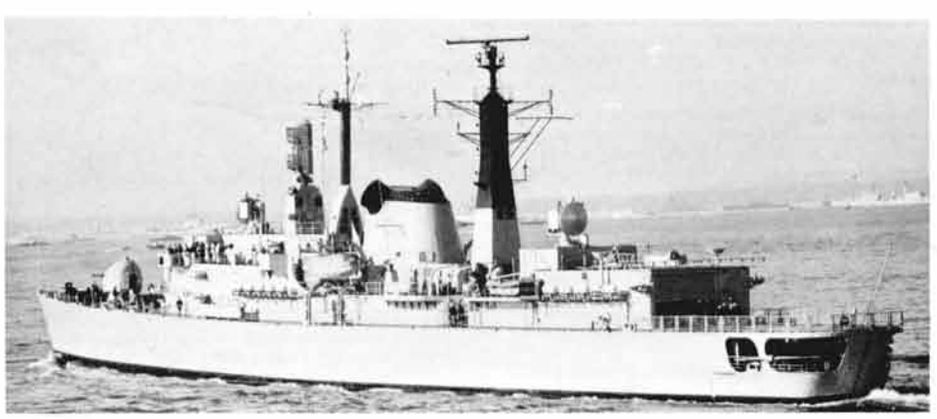
These two destroyers are of the British Type 42. On 18 May 1970 the signing of a contract between the Argentine Government and Vickers Ltd, Barrow-in-Furness was announced. This provided for the construction of these two ships, one to be built at Barrow-in-Furness and the second at Rio Santiago with British assistance and overseeing. *Santisima Trinidad* was sabotaged on 22 August 1975 whilst fitting-out and subsequently placed in floating-dock at AFNE. Began trials early 1981. *Hercules* was completed 10 May 1976 and arrived in Argentina on 20 August 1977 after trials and work-up in the UK.

Electronics: ADAWS-4 for co-ordination of action information by Plessey-Ferranti.

Missiles: Exocet launchers now sited amidships.

Radar: Search: One Type 965 with double AKE2 array and IFF
Surveillance and target indication: One Type 992Q.
Sea Dart fire control: Two Type 909.
Navigation, HDWS and helicopter control: One Type 1006.

Sonar: Type 184 hull-mounted. Type 162 classification.



HERCULES *6/1977, Dr. Giorgio Arra*

2 Ex-US "FLETCHER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ROSALES (ex-USS *Stembel,* DD 644)	D 22	Bath Iron Works Corporation, Bath, Maine	21 Dec 1942	8 May 1943	16 July 1943
ALMIRANTE STORNI (ex-USS *Cowell,* DD 547)	D 24	Bethlehem Steel Co, San Pedro	7 Sep 1942	18 Mar 1943	23 Aug 1943

Displacement, tons: 2 100 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18 *(114·8 × 12 × 5·5)*
Guns: 4—5 in *(127 mm)*/38 (single Mk 30); 6—3 in *(76 mm)*/50
Torpedo tubes: 4—21 in *(533 mm)* quad (D22)
A/S weapons: 2 fixed Hedgehogs; 1 DC rack (Mk 3);
6 (2 triple) Mk 32 torpedo tubes;
2 side-launching torpedo racks (D22)
Main engines: 2 sets GE or AC geared turbines 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 35
Range, miles: 6 000 at 15 knots
Oil fuel, tons: 650
Complement: 249

First transferred on loan to the Argentine Navy on 1 August 1961 and purchased on 14 January 1977. D 24 transferred 17 August 1971.

A/S weapons: All fitted with Mk 105 FCS.

Deletion: *Almirante Domecq Garcia* to scrap after collision in May 1980 with *25 De Maio.*

Fire control: Mk 37 director with Mk 25 radar; Mk 56 director with Mk 35 radar.

ROSALES *1978, Argentine Navy*

Radar: Search: SPS 6.
Tactical: SPS 10.

Sonar: One SQS 4.

2 Ex-US "ALLEN M. SUMNER (FRAM II)" and 1 Ex-US "ALLEN M. SUMNER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
SEGUI (ex-USS *Hank* DD 702)	D 25	Federal S.B. & D.D. Co	17 Jan 1944	21 May 1944	28 Aug 1944
HIPOLITO BOUCHARD (ex-USS *Borie* DD 704)	D 26	Federal S.B. & D.D. Co	29 Feb 1944	4 July 1944	21 Sep 1944
PIEDRA BUENA (ex-USS *Collett* DD 730)	D 29	Bath Iron Works Corporation, Bath, Maine	11 Oct 1943	5 Mar 1944	16 May 1944

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·5 × 5·8)*
Missiles: SSM; 4—Exocet (single launchers)
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38);
4—3 in *(76 mm)*/50 (twin Mk 33) *(Segui* only*)*
A/S weapons: 6—(2 triple) Mk 32 torpedo tubes; 2 ahead-firing Hedgehogs; facilities for small helicopter (except *Segui*)
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 34
Range, miles: 4 600 at 15 knots; 990 at 31 knots
Complement: *Hipolito Bouchard* 291; *Segui* 331

First pair transferred to Argentina on 1 July 1972. *Hipolito Bouchard* and *Piedra Buena* have been modernised with VDS, helicopter facilities and hangar. Two units, ex-USS *Mansfield* DD 728 and ex-USS *Collet* DD 730, transferred June 1974 and April 1974 respectively for spares. DD 730 was recommissioned in 1977 as *Piedra Buena* to replace *Espora* D 21 when she was scrapped. DD 728 sold for scrap in 1978.

A/S weapons: Fitted with Mk 105 FCS.

Radar: Search: SPS 6 *(Segui)*; SPS 40 (Others).
Tactical: SPS 10.
Fire control: Mk 37 director with Mk 25 radar. Mk 56 director with Mk 35 radar *(Segui).*

Sonar: *(Hipolito Bouchard* and *Piedra Buena).* SQS 30, SQA 10 (VDS). *(Segui)* SQS 30.

SEGUI *1978, Argentine Navy*

1 Ex-US "GEARING (FRAM II)" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
COMODORO PY (ex-USS *Perkins* DD 877)	D 27	Consolidated Steel Corporation	7 Dec 1944	Mar 1945	5 Apr 1945

Displacement, tons: 2 425 standard; approx 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Missiles: SSM; 4—Exocet (single launchers)
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 2 fixed Hedgehogs; 6 (2 triple) Mk 32 torpedo tubes; facilities for small helicopter
Main engines: 2 geared Westinghouse turbines; 60 000 hp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 32·5
Range, miles: 5 800 at 15 knots
Complement: 275

Transferred by sale on 15 January 1973.

A/S weapons: Fitted with Mk 105 FCS.

Gunnery: Mk 37 GFCS.

Radar: SPS 37.

Sonar: SQS 29.

COMODORO PY *1980, Dr. Robert Scheina*

FRIGATES

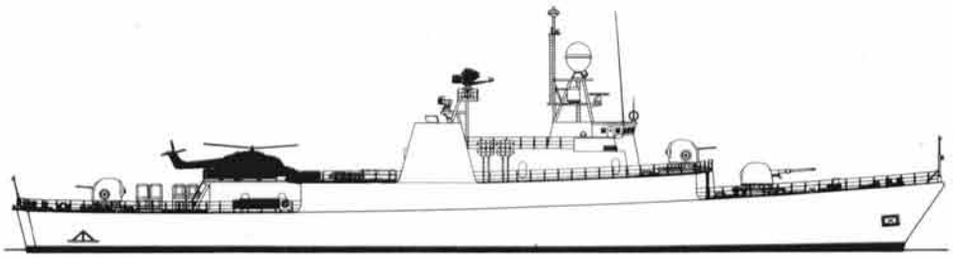
0 + 6 MEKO 1470 TYPE

Displacement, tons: 1 700 standard
Dimensions, feet (metres): 299·1 × 40 × 10·8 *(91·2 × 12·2 × 3·3)*
Aircraft: 1 Lynx helicopter (telescopic hangar)
Missiles: SSM; 4—MM 38 Exocet
Guns: 1—76 mm Compact; 2—40 mm (twin)
A/S weapons: 6 Ilas—3 torpedo tubes (triples)
Main engines: 20 000 hp
Speed, knots: 27
Complement: 100

A contract has been signed with Blohm and Voss for this group of a hitherto unknown type which is basically a scaled down MEKO 360. All six are to be fabricated in AFNE Rio Santiago. Fitted with fin stabilisers.

Radar: Air search: HSA DA-05.
Surface search: Decca.
Fire control: M-20 series.
Navigation: One set Decca.

Sonar: One hull-mounted set (KAE).



MEKO 1470 TYPE (without hangar and with four 40 mm)

3 FRENCH TYPE A 69

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Completed*
DRUMMOND (ex-*Good Hope*, ex-*Lieutenant de Vaisseau le Hénaff* F 789)	P 1	Lorient Naval Dockyard	12 Mar 1976	Mar 1977	Mar 1978
GUERRICO (ex-*Transvaal*, ex-*Commandant l'Herminier* F 791)	P 2	Lorient Naval Dockyard	1 Oct 1976	Sep 1977	1978
GRANVILLE	P 3	Lorient Naval Dockyard	1980	28 June 1980	1981

Displacement, tons: 950 standard; 1 170 full load
Dimensions, feet (metres): 262·5 × 33·8 × 9·8 *(80 × 10·3 × 3)*
Missiles: SSM; 2—MM 38 Exocet
Guns: 1—3·9 in *(100 mm)*; 2—40 mm (twin); 2—20 mm
A/S weapons: 6—Mk 32 torpedo tubes (triples)
Main engines: 2 SEMT-Pielstick 12 PC2V diesels; 2 shafts; cp propellers; 11 000 bhp.
Speed, knots: 24
Range, miles: 4 500 at 15 knots; 3 000 at 18 knots
Endurance, days: 15
Complement: 93 (10 officers, 83 men)

The first pair was originally built for the French Navy and sold to the South African Navy in 1976 whilst under construction. As a result of a UN embargo on arms sales to South Africa this sale was cancelled. Purchased by Argentina in autumn 1978. Both arrived in Argentina 2 November 1978. *Granville* was ordered in October 1979.

Fire control: Two Panda optical directors (one to be replaced by Naja) by CSEE.

DRUMMOND *1980, Dr. Robert Scheina*

Radar: Surface/Air search: One DRBV 51.
Fire control: One DRBC 32E.
Navigation: One Decca Type 202.

Sonar: One hull-mounted Diodon.

PATROL SHIPS

2 Ex-US "CHEROKEE" CLASS

Name	*No.*	*Builders*	*Commissioned*
COMMANDANTE GENERAL IRIGOYEN (ex-USS *Cahuilla* ATF 152)	A 1	Charleston S.B. and D.D. Co	10 Mar 1945
FRANCISCO DE GURRUCHAGA (ex-USS *Luiseno* ATF 156)	A 3	Charleston S.B. and D.D. Co	16 June 1945

Displacement, tons: 1 235 standard; 1 675 full load
Dimensions, feet (metres): 205 × 38·2 × 15·3 *(62·5 × 11·6 × 4·7)*
Guns: 6—40/60 mm (2 twin; 2 single)
Main engines: 4 sets diesels with electric drive; 3 000 bhp = 16 knots
Complement: 85

Fitted with powerful pumps and other salvage equipment. *Commandante General Irigoyen* transferred to Argentina at San Diego, California, in 1961. Classified as a tug until 1966 when she was re-rated as patrol vessel. *Francisco De Gurruchaga* transferred on 1 July 1975 by sale.

Loss: *Commandante General Zapiola* ran aground in November 1976 off Falkland Islands and was lost.

COMMANDANTE GENERAL IRIGOYEN *1980, Dr. Robert Scheina*

2 "KING" CLASS

Name	*No.*	*Builders*	*Commissioned*
MURATURE	P 20	Base Nav. Rio Santiago	Apr 1945
KING	P 21	Base Nav. Rio Santiago	Nov 1946

Displacement, tons: 913 standard; 1 000 normal; 1 032 full load
Dimensions, feet (metres): 252·7 × 29 × 7·5 *(77 × 8·8 × 2·3)*
Guns: 3—4 in *(105 mm)*; 4—40 mm Bofors; 5—MGs
Main engines: 2—Werkspoor 4-stroke diesels; 2 500 bhp; 2 shafts
Speed, knots: 18
Oil fuel (tons): 90
Range, miles: 6 000 at 12 knots
Complement: 100

Named after Captain John King, an Irish follower of Admiral Brown, who distinguished himself in the war with Brazil, 1826-28; and Captain Murature, who performed conspicuous service against the Paraguayans at the Battle of Cuevas in 1865. Used for cadet training.
King laid down June 1938, launched November 1943. *Murature* laid down March 1940, launched July 1943.

MURATURE *1974, Argentine Navy*

3 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
YAMANA (ex-USS *Maricopa* ATA 146)	A 6	Levingstone S.B. Co, Orange	20 Jan 1943
ALFEREZ SOBRAL (ex-USS *Catawba*, ATA 210)	A 9	Levingstone S.B. Co, Orange	18 Apr 1945
COMODORO SOMELLERA (ex-USS *Salish* ATA 187)	A 10	Levingstone S.B. Co, Orange	7 Dec 1944

Displacement, tons: 689 standard; 800 full load
Dimensions, feet (metres): 143 × 34 × 12 *(43·6 × 10·4 × 3·7)*
Guns: 1—40 mm; 2—20 mm (singles)
Main engines: Diesel-electric; 1 500 bhp = 12·5 knots
Oil fuel (tons): 154
Range, miles: 16 500 at 8 knots
Complement: 49

Former US auxiliary ocean tugs. A 6 is fitted as a rescue ship and was acquired in 1947. Classified as an ocean salvage tug until 1966 when it was re-rated as a patrol vessel. A 9 and A 10 were transferred on 10 February 1972.

Reclassification: *Chiriguano* (ex-US ATA 227) and *Sanaviron* (ex-US ATA 228) now operate as tugs.

YAMANA *1980, Dr. Robert Scheina*

AMPHIBIOUS FORCES

1 Ex-US LST

Name	*No.*	*Builders*	*Commissioned*
CABO SAN PIO (ex-USS LST 1044)	Q 50	Dravo Corporation, Neville Is, Pa, USA	2 Mar 1945

Displacement, tons: 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 4·3)*
Main engines: 2 diesels; 2 shafts; 1 800 bhp = 11 knots
Oil fuel, tons: 700
Range, miles: 9 500 at 9 knots
Complement: 80

Transferred 1946-47. Being used commercially.

1 Ex-US LANDING SHIP (DOCK)

Name	*No.*	*Builders*	*Commissioned*
CANDIDO DE LASALA (ex-USS *Gunston Hall* LSD 5)	Q 43	Moor Dry Dock Co, Oakland	10 Nov 1943

Displacement, tons: 5 480 standard; 9 375 full load
Dimensions, feet (metres): 457·8 × 72·2 × 18 *(139·6 × 22 × 5·5)*
Guns: 12—40 mm
Main engines: 2 Skinner Unaflow; 2 shafts; 7 400 shp = 15·4 knots
Boilers: Two 2-drum
Range, miles: 8 000 at 15 knots
Complement: Accommodation for 326 (17 officers and 309 men)

Arcticized in 1948/49. Transferred from the US Navy on 1 May 1970. Carries 14 LCA and has helicopter facilities. Used as light forces tender.

CANDIDO DE LASALA *1980, Dr. Robert Scheina*

1 LANDING SHIP (TANK)

Name	*No.*	*Builders*	*Commissioned*
CABO SAN ANTONIO	Q 42	AFNE, Rio Santiago	2 Nov 1978

Displacement, tons: 4 300 light; 8 000 full load
Dimensions, feet (metres): 445 × 62 × 16·5 *(135·6 × 18·9 × 5)*
Guns: 12—40/60 mm (3 quad)
Main engines: Diesels; 2 shafts; 13 700 bhp = 16 knots
Complement: 124

Designed to carry a helicopter and two landing craft. Launched 1968. Completion delayed. Completed ex-trials 12 January 1977. Modified US "De Soto County" class—principal difference being the fitting of Stülcken heavy-lift gear and different armament.

Radar: Plessey AWS-1.

CABO SAN ANTONIO *1978, Argentine Navy*

4 Ex-US LCMs

EDM 1, 2, 3, 4

Displacement, tons: 28
Dimensions, feet (metres): 56 × 14 × 3·9 *(17·1 × 4·3 × 1·2)*
Main engines: 2 Gray diesels; 450 bhp = 11 knots

Acquired in USA June 1971.

8 Ex-US LCVPs

EDVP 30-37

Dimensions, feet (metres): 35·8 × 10·5 × 3·6 *(10·9 × 3·2 × 1·1)*
Main engine: 1 diesel; approx 250 hp

Incorporated in May 1970.

ARGENTINIAN LCVPs

Displacement, tons: 7·5
Dimensions, feet (metres): 35·8 × 10·5 × 1·6 *(10·9 × 3·2 × 0·5)*
Main engine: Fiat diesel, 200 hp = 9 knots

Built by AFNE and El Tigre since 1971. Total not known.

LIGHT FORCES

2 TYPE TNC 45 (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
INTREPIDA	P 85	Lürssen, Bremen	20 July 1974
INDOMITA	P 86	Lürssen, Bremen	Dec 1974

Displacement, tons: 268 full load
Dimensions, feet (metres): 149 × 24·3 × 7·5 *(45·4 × 7·4 × 2·3)*
Guns: 1—3 in *(76 mm)*/62 OTO Melara Compact; 2—40 mm/70 Bofors L70
Rocket launcher: 2 Oerlikon 81 mm
Torpedo tubes: 2—21 in for wire-guided torpedoes
Main engines: 4 diesels; 4 shafts; 12 000 hp = 40 knots
Range, miles: 1 450 at 20 knots
Complement: 35

These two vessels were ordered in 1970. *Intrepida* launched on 2 December 1973, *Indomita* on 8 April 1974.

Radar: Fire control: Hollandse Signaal WM20 for guns; M11 for torpedoes.

INTREPIDA *1978, Argentine Navy*

4 "DABUR" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BARADERO	P 61	Israel Aircraft Industries (RAMTA)	1978
BARRANGUERAS	P 62	Israel Aircraft Industries (RAMTA)	1978
CLORINDA	P 63	Israel Aircraft Industries (RAMTA)	1978
CONCEPCIÓN DEL URUGUAY	P 64	Israel Aircraft Industries (RAMTA)	1978

Displacement, tons: 33·7 standard
Dimensions, feet (metres): 64·9 × 18 × 5·7 *(19·8 × 5·5 × 1·8)*
Guns: 2—20 mm; 2 MGs
Main engines: 2 diesels; 960 hp; 2 shafts = 22 knots
Range, miles: 700 cruising
Complement: 9

Of all aluminium construction.

"DABUR" Class *1978, RAMTA*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
SURUBI	P 55	Ast. Nav. del Estero	1951

Displacement, tons: 65
Dimensions, feet (metres): 45·9 × 9·5 × 4·6 *(14 × 2·9 × 1·4)*
Guns: MGs
Main engines: 2 diesels; 340 hp = 12 knots

2 Ex-US "HIGGINS" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
ALAKUSH	P 82	New Orleans S.B.	1946
TOWORA	P 84	New Orleans S.B.	1946

Displacement, tons: 45 standard; 50 full load
Dimensions, feet (metres): 78·7 × 9·8 × 4·6 *(24 × 3 × 1·4)*
Guns: 2—40/60 mm; 4 MGs
Rocket launchers: 2 octuple sets 12·7 cm
Main engines: 3 Packard (petrol); 4 500 hp = 42 knots
Range, miles: 1 000 at 20 knots
Complement: 12

The last of a class of nine. Given names in 1972.

MINE WARFARE FORCES

6 Ex-BRITISH "TON" CLASS
(MINESWEEPERS—COASTAL and MINEHUNTERS)

Name	*No.*	*Builders*	*Launched*
NEUQUEN (ex-HMS *Hickleton*)	M 1	Thornycroft	26 Jan 1955
RIO NEGRO (ex-HMS *Tarlton*)	M 2	Doig	10 Nov 1954
CHUBUT (ex-HMS *Santon*)	M 3	Fleetlands	18 Aug 1955
TIERRA DEL FUEGO (ex- HMS *Bevington*)	M 4	Whites	17 Mar 1953
CHACO (ex-HMS *Rennington*)	M 5	Richards	27 Nov 1958
FORMOSA (ex-HMS *Ilmington*)	M 6	Camper, Nicholson	8 Mar 1954

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·6 × 8·4 × 2·5)*
Gun: 1—40/60 mm
Main engines: 2 diesels; 2 shafts; 3 000 bhp = 15 knots
Oil fuel, tons: 45
Range, miles: 2 300 at 13 knots; 3 000 at 8 knots
Complement: Minesweepers 27; Minehunters 36

Former British coastal minesweepers of the "Ton" class. Of composite wooden and non-magnetic metal construction. Purchased in 1967. In 1968 *Chaco* and *Formosa* were converted into minehunters in HM Dockyard, Portsmouth, and the other four were refitted and modernised as minesweepers by the Vosper Thornycroft Group with Vosper activated-fin stabiliser equipment.

CHACO *1980, Dr. Robert Scheina*

SURVEY AND OCEANOGRAPHIC SHIPS

1 "PUERTO DESEADO" CLASS

Name	*No.*	*Builders*	*Commissioned*
PUERTO DESEADO	Q 8	Astarsa, San Fernando	1979

Displacement, tons: 2 133 standard
Dimensions, feet (metres): 251·9 × 51·8 × 21·3 *(76·8 × 15·8 × 6·5)*
Main engine: 2 Fiat diesels; 1 shaft; 3 600 hp = 15 knots
Range, miles: 12 000 at 12 knots
Complement: 61

Puerto Deseado laid down on 17 March 1976 for Consejo Nacional de Investigaciones Tecnicas y Scientificas. Civilian manned. Launched on 4 December 1976.

1 Ex-US TYPE V4 TUG

Name	*No.*	*Builders*	*Commissioned*
GOYENA (ex-USS *Dry Tortuga*)	Q 17 (ex-A 3)	Pendleton S.Y. New Orleans	1943

Displacement, tons: 1 863 full load
Dimensions, feet (metres): 191·3 × 37 × 18 *(58·3 × 11·3 × 5·5)*
Guns: 2—40 mm Bofors (twin); 2—20 mm (single)
Main engines: 2 Enterprise diesels; 2 250 bhp = 12 knots
Oil fuel, tons: 532
Complement: 62

Leased to Argentina in 1965. Purchased on 14 February 1976. Used as survey ship.

V4 Tug *1973, Argentine Navy*

Name	*No.*	*Builders*	*Commissioned*
COMODORO RIVADAVIA	Q 11	Mestrina, Tigre	6 Dec 1974

Displacement, tons: 609 standard; 667 full load
Dimensions, feet (metres): 171·2 × 28·9 × 8·5 *(52·2 × 8·8 × 2·6)*
Main engines: 2 Werkspoor Stork RHO-218K diesels; 1 160 hp = 12 knots
Range, miles: 6 000 at 12 knots
Complement: 27

Laid down on 17 July 1971 and launched on 2 December 1972.

COMODORO RIVADAVIA *1980, Dr. Robert Scheina*

1 SURVEY LAUNCH

Name	*No.*	*Builders*	*Commissioned*
CORMORAN	Q 15	AFNE, Rio Santiago	20 Feb 1964

Displacement, tons: 102
Dimensions, feet (metres): 83 × 16·4 × 5·9 *(25·3 × 5 × 1·8)*
Main engines: 2 diesels; 440 hp = 11 knots
Complement: 19

Launched 10 August 1963.

1 SURVEY LAUNCH

Name	*No.*	*Builders*	*Commissioned*
PETREL	—	Cadenazzi, El Tigre	1965

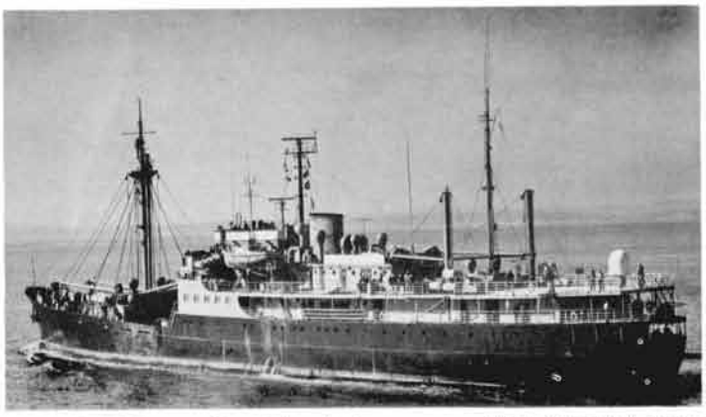
Displacement, tons: 50
Dimensions, feet (metres): 64·8 × 14·8 × 5·6 *(19·7 × 4·5 × 1·7)*
Main engines: 2 diesels; 340 hp = 9 knots
Complement: 9

TRANSPORTS

Name	*No.*	*Builders*	*Commissioned*
BAHIA AGUIRRE	B 2	Canadian Vickers, Halifax	Apr 1950
BAHIA BUEN SUCESO	B 6	Canadian Vickers, Halifax	June 1950

Displacement, tons: 3 100 standard; 5 000 full load
Dimensions, feet (metres): 334·7 × 47 × 13·8 *(102 × 14·3 × 4·2)*
Main engines: 2 sets Nordberg diesels; 2 shafts; 3 750 bhp = 16 knots
Oil fuel, tons: 355 (B 2); 442 (B 6)
Complement: 100

Survivors of class of three.



BAHIA AGUIRRE (new satellite aerial on stern) *8/1978, Michael D. J. Lennon*

3 "COSTA SUR" CLASS

Name	*No.*	*Builders*	*Commissioned*
CANAL BEAGLE	B 3	Astillero Principe y Menghi SA	29 Apr 1978
BAHIA SAN BLAS	B 4	Astillero Principe y Menghi SA	27 Nov 1978
CABO DE HORNOS (ex-*Bahia Camarones*)	B 5	Astillero Principe y Menghi SA	28 June 1979

Measurement, tons: 4 600 gross; 5 800 deadweight
Dimensions, feet (metres): 390·3 × 57·4 ×21 *(119 × 17·5 × 6·4)*
Main engines: 2 diesels; 6 400 hp = 15 knots

Ordered December 1975. To replace three ex-US LSTs *(Cabo San Gonzalo, San Vicente* and *San Pio)*. To be used commercially. Laid down 10 January 1977, 11 April 1977 and 29 April 1978. Launched 19 October 1977, 29 April 1978 and 4 November 1978.

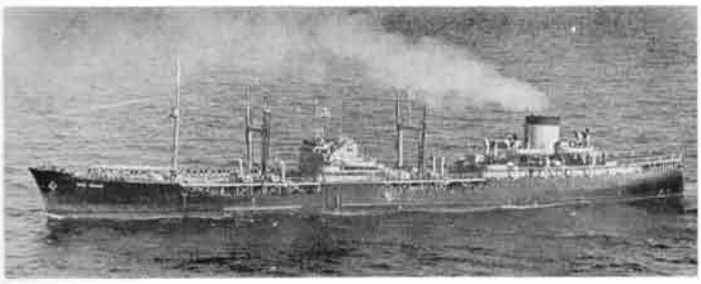
TANKERS

1 LARGE FLEET TANKER (FLEET SUPPORT)

Name	*No.*	*Builders*	*Commissioned*
PUNTA MEDANOS	B 18	Swan Hunter	10 Oct 1950

Displacement, tons: 14 352 standard; 16 331 full load
Measurement, tons: 8 250 deadweight
Dimensions, feet (metres): 502 × 62 × 26·5 *(153·1 × 18·9 × 8·1)*
Main engines: Double reduction geared turbines. 2 shafts; 11 000 shp = 18 knots
Boilers: 2 Babcock & Wilcox 2-drum integral furnace water-tube
Oil fuel, tons: 1 500
Range, miles: 13 700 at 15 knots
Complement: 99

Available as a training vessel. Boilers and turbines built under licence by the Wallsend Slipway & Engineering Company. Steam conditions of 400 psi pressure and 750°F. Fitted with helicopter platform.



PUNTA MEDANOS *1978, Argentine Navy*

1 Ex-US "KLICKITAT" CLASS (FLEET SUPPORT)

Name	*No.*	*Builders*	*Commissioned*
PUNTA DELGADA (ex-SS *Sugarland*, ex-*Nanticoke* AOG 66)	B 16	St. Johns River S.B. Jacksonville	1945

Displacement, tons: 5 930 standard; 6 090 full load
Dimensions, feet (metres): 325 × 48·2 × 20 *(99·1 × 14·7 × 6·1)*
Main engines: Westinghouse diesel; 1 shaft; 1 400 bhp = 11·5 knots
Oil fuel, tons: 150
Range, miles: 9 000 at 11 knots
Complement: 72

USMS type T1-M-BT1. Launched on 7 April 1945. Used commercially.

1 TANKER (FLEET SUPPORT)

Name	*No.*	*Builder*	*Commissioned*
PUNTA ALTA	B 12	Puerto Belgrano	1938

Displacement, tons: 1 600 standard; 1 900 full load
Measurement, tons: 800 deadweight
Dimensions, feet (metres): 210 × 33·8 × 12·5 *(64 × 10·3 × 3·8)*
Main engines: Diesel; 1 shaft; 1 850 bhp = 8 knots
Oil fuel, tons: 146
Complement: 40

POLAR SHIPS

1 POLAR TRANSPORT

Name	*No.*	*Builders*	*Commissioned*
BAHIA PARAISO	Q 6	Astillero Principe y Menghi SA	1981

Displacement, tons: 9 600 full load
Dimensions, feet (metres): 435·3 × 64 × 31·8 *(132·7 × 19·5 × 9·7)*
Aircraft: 2 helicopters
Main engines: 2 diesels; 2 shafts; 15 000 shp
Speed, knots: 18
Complement: 124 ship's company; 82 passengers (+ 44 for transit)

Ordered on 27 February 1979. Icebreaking capability not known at present. Launched 3 July 1980.

1 WÄRTSILÄ TYPE

Name	*No.*	*Builders*	*Commissioned*
ALMIRANTE IRIZAR	Q 5	Wärtsilä (Helsinki)	15 Dec 1978

Displacement, tons: 11 811
Dimensions, feet (metres): 392 × 82 × 31·2 *(119·3 × 25 × 9·5)*
Main engines: Diesel-electric; 16 200 shp (4 Wärtsilä-SEMT-Pielstick 8PC2·5L diesels); 2 shafts
Speed, knots: 16·5
Complement: 133 ship's company; 100 passengers

Contract signed on 17 December 1975. The ship is designed for Antarctic support operations and will be able to remain in the polar regions throughout the winter with 210 people aboard. Fitted for helicopters and landing craft with two 16 ton cranes. Fin stabilisers, Wärtsilä bubbling system and a 60 ton towing winch. Laid down 4 July 1977, launched 3 February 1978. Painted with red hull and white upperworks with red funnel and black top. Cost $61·5 million.

Radar: Search: AWS 2.
Navigation: Two Decca.

ALMIRANTE IRIZAR *1978, Wärtsilä*

1 "GENERAL SAN MARTIN" CLASS

Name	*No.*	*Builders*	*Commissioned*
GENERAL SAN MARTIN	Q 4	Seebeck Yd-Weser AG	Oct 1954

Displacement, tons: 4 854 standard; 5 301 full load
Measurement, tons: 1 600 deadweight
Dimensions, feet (metres): 279 × 61 × 21 *(85·1 × 18·6 × 6·4)*
Aircraft: 1 reconnaissance aircraft and 1 helicopter
Guns: 2—40 mm Bofors
Main engines: 4 diesel-electric; 2 shafts; 7 100 hp = 16 knots
Oil fuel, tons: 1 100
Range, miles: 35 000 at 10 knots
Complement: 160

Launched on 24 June 1954. Fitted for research. New second radar mast fitted on after end of the hangar in late 1972. To be relieved by *Almirante Irizar*.

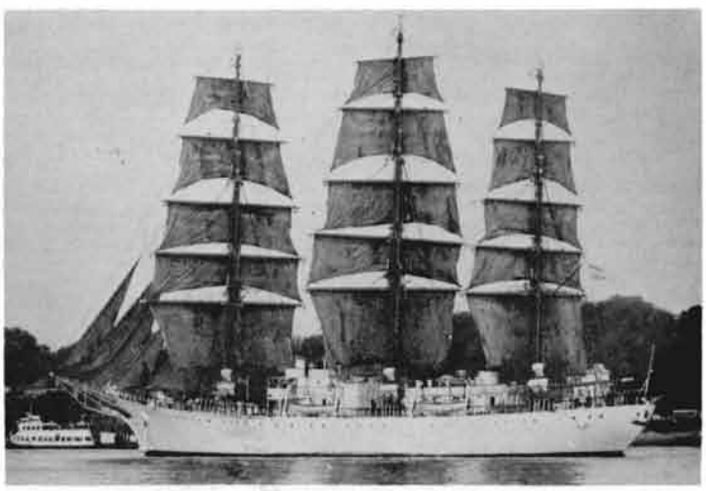
GENERAL SAN MARTIN *1970, Argentine Navy*
(2nd radar mast now fitted and 4-in gun removed)

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
LIBERTAD	Q 2	AFNE, Rio Santiago	1962

Displacement, tons: 3 025 standard; 3 765 full load
Dimensions, feet (metres): 262 wl; 301 oa × 47 × 21·8 *(79·9; 91·7 × 14·3 × 6·6)*
Guns: 1—3 in; 4—40 mm; 4—47 mm saluting
Main engines: 2 Sulzer diesels; 2 400 bhp = 13·5 knots
Complement: 370 (crew) plus 150 cadets

Launched on 20 June 1956. She is the largest sail training ship in the world and set up the fastest crossing of the North Atlantic under sail in 1966, a record which still stands.



LIBERTAD *1978, Reinhard Nerlich*

TUGS

2 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
CHIRIGUANO (ex-US ATA 227)	A 7	Levingstone S.B. Co	1945
SANAVIRON (ex-US ATA 228)	A 8	Levingstone S.B. Co	1945

Details as for "Sotoyomo" class under "Patrol Ships" except that gun has been removed.

2 "QUILMES" CLASS

Name	*No.*	*Builders*	*Commissioned*
QUILMES	R 32	Rio Santiago	30 Mar 1960
GUAYCURU	R 33	Rio Santiago	29 July 1960

Displacement, tons: 368 full load
Dimensions, feet (metres): 107·2 × 24·4 × 12·5 *(32·7 × 7·4 × 3·8)*
Main engines: Skinner Unaflow engines; 645 hp = 9 knots
Boilers: Cylindrical
Oil fuel, tons: 52
Range, miles: 2 200 at 7 knots
Complement: 14

Laid down on 23 August and 15 March 1956 respectively, launched on 27 December 1958 and 8 July 1957.

Name	*No.*	*Builders*	*Commissioned*
PEHUENCHE	R 29	Rio Santiago	1954
TONOCOTE	R 30	Rio Santiago	1954

Displacement, tons: 330
Dimensions, feet (metres): 105 × 24·7 × 12·5 *(32× 7·5 × 3·8)*
Main engines: Triple expansion; 600 ihp = 11 knots
Boilers: 2
Oil fuel, tons: 36
Range, miles: 1 200 at 9 knots
Complement: 13

Name	*No.*	*Builders*	*Commissioned*
QUERANDI	R 2	Ast. Vicente Forte, Buenos Aires	22 Aug 1978
TEHUELCHE	R 3	Ast. Vicente Forte, Buenos Aires	2 Nov 1978

Displacement, tons: 270
Dimensions, feet (metres): 110·2 × 27·6 × 9·8 *(33·6 × 8·4 × 3)*
Main engines: 2 MAN diesels; 1 320 bhp = 12 knots
Range, miles: 1 100 at 12 knots
Complement: 30

Ordered 1973. R 2 launched 20 December 1977.

Name	*No.*	*Name*	*No.*
MOCOVI	R 5 (ex-US YTL 441)	**CAPAYAN**	R 16 (ex-US YTL 443)
CALCHAQUI	R 6 (ex-US YTL 445)	**CHIQUILLAN**	R 18 (ex-US YTL 444)
CHULUPI	R 10 (ex-US YTL 426)	**MORCOYAN**	R 19 (ex-US YTL 448)

Displacement, tons: 70
Dimensions, feet (metres): 67 × 14 × 13 *(20·4 × 4·3 × 4)*
Main engines: Diesel; 310 bhp = 10 knots
Oil fuel, tons: 8·7
Complement: 5

YTL Type built in USA and transferred on lease in March 1965 (R 16, 18, 19), remainder in March 1969. All purchased on 16 June 1977.

FLOATING DOCKS

Number	*Dimensions, feet (metres)*	*Capacity, tons*
Y 1 (ex-ARD 23)	492 × 88·6 × 56 *(150 × 27 × 17·1)*	3 500
2	300·1 × 60 × 41 *(91·5 × 18·3 × 12·5)*	1 500
3 (ex-ASD 40)	215·8 × 46 × 45·5 *(65·8 × 14 × 13·7)*	750
—	215·8 × 46 × 45·5 *(65·8 × 14 × 13·7)*	750
A	565·8 × 85·3 *(172·5 × 26)*	12 000
B	360·8 × 59 *(110 × 18)*	2 800
C	246 × 51·5 *(75 × 15·7)*	1 000

First three are at Darsena Norte, Buenos Aires, the fourth at Puerto Belgrano and last three at Darsena Este. No 2 was built in 1913, A in 1957-68 and B in 1956.

AUXILIARIES

Two naval sail-training ships, *Fortuna I* (Q 74) and *Fortuna II* of 31·5 tons and 17 tons respectively built by Tandanor, Buenos Aires.
The ex-training ship *Presidente Sarmiento* is retained at Buenos Aires as a museum ship, as also is the 1874 Corvette *Uruguay*.
Auxiliary EM6 launched by T.A.R. in 1976.
Motor-yachts *Tequara* (Q 72), *Itati* (Q 73) and *Adhara* also listed.

FLOATING CRANES

At least four—at Darsena Norte, Rio Santiago, Mar de Plata and Puerto Belgrano.

ARMY WATERCRAFT

Several LCPs (BDPs) are operated. Built by Ast. Vicente Forte. Ferries for crossing Rio Parana include two built in 1969.

PREFECTURA NAVAL ARGENTINA

1 "BOUCHARD" CLASS

Name	*No.*	*Builders*	*Commissioned*
SPIRO	GC 12	Rio Santiago	1938

Displacement, tons: 560 normal; 650 full load
Dimensions, feet (metres): 197 × 24 × 11·5 *(60 × 7·3 × 3·5)*
Guns: 4—40 mm/60 (twin) Bofors
Main engines: 2 MAN diesels; 2 000 bhp = 13 knots
Range, miles: 3 000 at 10 knots
Complement: 77

Former minesweeper of the "Bouchard" class. Sister ships *Bouchard, Py, Parker* and *Seaver* were transferred to the Paraguayan Navy in 1964-67. This class, originally of nine, were the first warships built in Argentine yards.

SPIRO *1969, Argentine Navy*

0 + 5 CORVETTES

Displacement, tons: 900
Dimensions, feet (metres): 213·2 × 34·4 × 18 *(65 × 10·5 × 5·5)*
Main engines: 7 500 hp = 20 knots
Complement: 33

Ordered in 1979 from Bazán, Spain.

1 PATROL CRAFT

Name	*No.*	*Builders*	*Completed*
DELFIN	GC 13	Ijsselwerf, Netherlands	1957

Displacement, tons: 1 000
Dimensions, feet (metres): 193·5 × 30·5 × 15·4 *(59 × 9·3 × 4·7)*
Main engines: 2 300 hp = 15 knots
Complement: 28

Whaler type acquired for PNA in 1969. Commissioned March 1970.

1 AVISO TYPE

Name	*No.*	*Builders*	*Completed*
ALBATROS	GC 42	Astillero Sánchez, El Tigre	1939

Dimensions, feet (metres): 135·8 × 20·7 × 5·9 *(41·4 × 6·3 × 1·8)*
Main engine: 1 diesel; 600 hp = 13 knots
Complement: 10

Acquired by PNA in 1960 for pilot duties.

3 AVISO TYPE

Name	*No.*	*Builders*	*Commissioned*
MANDUBI	GC 43	Base Naval Rio Santiago	1940
ROBALO	GC 45	Base Naval Puerto Belgrano	1942
DORADO	GC 101	Base Naval Rio Santiago	1939

Displacement, tons: 215 (GC 45), 208 (others)
Dimensions, feet (metres): 114·8 (GC 45), 108·9 (others) × 13·1 × 6·2
(35 (GC 45), *33·2* (others) × *4 × 1·9)*
Main engines: 2 General Motors diesels; 450 hp = 11 knots
Complement: 10

Dorado used as patrol vessel, other two on pilot duties.

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
TONINA	GC 47	Sanym SA, San Fernando, Spain	21 Oct 1977

Displacement, tons: 200 full load
Dimensions, feet (metres): 83·8 × 10·1 × — *(25·5 × 3·3 × —)*
Gun: 1—20 mm
Main engines: 500 hp
Range, miles: 3 400
Complement: 11

3 "LYNCH" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
LYNCH	GC 21	AFNE, Rio Santiago	1964
TOLL	GC 22	AFNE, Rio Santiago	1965
EREZCANO	GC 23	AFNE, Rio Santiago	1967

Displacement, tons: 100 normal; 117 full load
Dimensions, feet (metres): 90 × 19 × 6 *(27·4 × 5·8 × 1·8)*
Gun: 1—20 mm
Main engines: 2 Maybach diesels; 2 700 bhp = 22 knots
Complement: 16

LYNCH *1969, Argentine Navy*

20 BLOHM AND VOSS Z-28 TYPE (COASTAL PATROL CRAFT)

MAR DEL PLATA GC 64
MARTIN GARCIA GC 65
RIO LUJAN GC 66
RIO URUGUAY GC 67
RIO PARAGUAY GC 68
RIO PARANA GC 69
RIO DE LA PLATA GC 70
LA PLATA GC 71
BUENOS AIRES GC 72
CABO CORRIENTES GC 73
RIO QUEQUEN GC 74
BAHIA BLANCA GC 75
INGENIERO WHITE GC 76
GOLFO SAN MATIAS GC 77
MADRYN GC 78
RIO DESEADO GC 79
USHUAIA GC 80
CANAL DE BEAGLE GC 81
ISLAS MALVINAS GC 82
RIO IGUAZU GC 83

Displacement, tons: 81
Dimensions, feet (metres): 91·8 × 17·4 × 5·6 *(28 × 5·3 × 1·7)*
Guns: 2—20 mm
Main engines: 2 MTU 331-TO92 diesels; 2 shafts
Speed, knots: 22
Range, miles: 1 200 at 12 knots; 780 at 18 knots
Complement: 15

Ordered 24 November 1978. First were delivered mid-1979. Steel hulls.

CABO CORRIENTES *1980, Dr. Robert Scheina*

1 Ex-US 63 ft AVR (LARGE PATROL CRAFT)

ANZOATEGUI GC 31

Dimensions as for US 63 ft AVR class but of slightly different silhouette.

14 SMALL PATROL CRAFT

GC 48 — GC 61

Dimensions, feet (metres): 41 × 11·8 × 5·9 *(12·5 × 3·6 × 1·8)*
Main engines: 2 diesels; 230 hp = 20 knots

First delivered September 1978.

1 SAIL TRAINING SHIP

ESPERANZA

Of 32 tons launched December 1968.

AUSTRALIA

Administration

Minister for Defence (and Navy):
Hon D. J. Killen, MP

Chief of Defence Force Staff:
Admiral Sir Anthony Synnot, KBE, AO, RAN

Headquarters' Appointments

Chief of Naval Staff:
Vice-Admiral G. J. Willis AO, RAN
Deputy Chief of the Naval Staff:
Rear-Admiral J. D. Stevens, RAN
Chief of Naval Personnel:
Rear-Admiral D. W. Leach, CBE, MVO, RAN
Chief of Naval Technical Services:
Rear-Admiral G. A. Bennett, OBE, RAN
Chief of Naval Materiel:
Rear-Admiral W. J. Rorke, OBE, RAN
Chief of Naval Operational Requirements and Plans:
Rear-Admiral R. G. Loosli, CBE, ADC, RAN

Senior Appointments

Flag Officer Commanding Australian Fleet:
Rear-Admiral P. H. Doyle, AO, OBE, RAN
Flag Officer Naval Support Command:
Rear-Admiral A. J. Robertson, DSC, RAN

Diplomatic Representation

Naval Attaché in Jakarta:
Act/Captain H. A. Josephs, RAN
Naval Representative in London:
Captain R. M. Baird, RAN
Naval Attaché in Paris:
Captain G. Harris, RAN
Defence Advisor, Singapore:
Captain D. H. Thomson, RAN
Naval Attaché in Washington:
Commodore J. A. O'Farrell, AM, RAN
Head of Australian Defence Liaison Staff, Washington:
Rear-Admiral J. Davidson, RAN

Personnel

1 January 1975: 15 811 officers and sailors
1 January 1976: 15 909 officers and sailors
1 January 1977: 16 390 officers and sailors (including 850 WRANS)
30 June 1978: 16 380 officers and sailors (target strength including 900 WRANS)
30 June 1979: 16 530 officers and sailors (target strength including 900 WRANS)
30 June 1980: 16 780 officers and sailors (target strength including 900 WRANS)
30 June 1981: 17 300 officers and sailors (target strength including 900 WRANS)

Navy Estimates

	$A
1974-75:	375 014 000
1975-76:	428 879 000
1976-77:	539 808 000
1977-78:	565 172 000
1978-79:	703 211 000
1979-80:	812 744 000
1980-81:	1 033 413 000

Naval Bases

FONSC—Sydney and Jervis Bay
NOC Queensland—Brisbane and Cairns (PCs and LCHs)
NOC Northern Australia—Darwin (PCs)
NOC W. Australia—HMAS *Stirling* Cockburn Sound (commissioned 28 July 1978)
Note: New patrol craft bases to be built at Darwin and Cairns. At Darwin construction underway for completion in 1982 including cyclone-proof shelters for patrol craft.

Naval Shipyards

Building at Williamstown (Melbourne) and Cockatoo Island (Sydney). Refits at both and Garden Island (Sydney). Garden Island Yard is being renovated.

Fleet Air Arm

Squadron	*Aircraft*
HC-723	Iroquois, Wessex 31B (Utility) and Bell 206B-1 helos (Utility, SAR and FRU)
VC-724	A4G and TA4G Skyhawks, Macchi Trainers (Training, FRU and Trials)
VF-805	A4G Skyhawks (Front line fighter/strike)
VS-816	S2G Trackers (Front line A/S)
HS-817	Sea King Mk 50 helos (Front line A/S)
VC-851	S2G/S2E Trackers, HS 748 (Training, communications and FRU)

Note: The Royal Australian Air Force (RAAF) has 20 P3B and P3C (Orion) maritime patrol aircraft. Four F111C are fitted with reconnaissance pallets. Four more F111 to be bought to replace losses.

Prefix to Ships' Names

HMAS. Her Majesty's Australian Ship

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Patrol Submarines	6	—
Attack Carrier (Medium)	1	—
Destroyers	4 (3DDG)	—
Frigates (GM)	2	2 (+2)
Frigates	6	—
MCM Vessels	3	(2)
Large Patrol Craft	14	13 (5)
Oceanographic Survey Ships	3	1
Fleet Tankers	1	1
Destroyer Tender	1	—
Training Ship	1	—
Landing Craft (Heavy)	6	—
Landing Ship (Heavy)	1	—
Miscellaneous	48	3 (1)
Tugs	5	—
Army Craft	20	—
RAAF Craft	3	—
Customs Craft	3	—

Other Service Craft

(a) Australian Army
18 Ex-US LCM (8)
4 LCVPs
2 Coastal Tugs
(b) RAAF:
1 76 ft ASR (Townsville)
2 63 ft ASR (Newcastle)

Naval Procurement and Modernisation

Government plans to improve the RAN have advanced over the last year with decisions taken and orders placed. The Defence Budget for 1980-81 announced in August 1980 contained an allowance of $A3 541 milion, a real increase of seven per cent on that of 1979-80, representing about 2·8 per cent of GDP. Of the total, 49 per cent represents expenditure on manpower, 28 per cent running costs, 18 per cent capital costs (a real increase of 19 per cent), 4 per cent capital facilities and 1 per cent defence co-operation. The overall increase by 7 per cent instead of the planned 5·5 per cent is accounted for by the decisions to acquire a fourth FFG, to establish the army's Operational Deployment Force at Townsville and to accelerate the growth of the army reserve.
In the general area of defence the RAN is affected by the decision to deploy a task force to the Indian Ocean and by the offer of support facilities to the USA.
Particular items of a naval nature announced in August/September 1980 are:—
(a) The order for a fourth FFG *(Darwin)* from the USA. The total cost of these four ships is forecast as $A 1 041 million. The type of helicopter carried is yet to be decided.
(b) Two more FFG type (with options on four more) to be ordered to replace the "River" class. These are to be built at Williamstown when the modernisation of that yard is completed in the mid-1980s.
(c) Planned improvements to HMAS *Stirling* (Cockburn Sound) to start in 1980 (armament depot, fuelling facilities and housing).
(d) Modernisation of Garden Island base and dockyard to start in 1980-81.
(e) $A27 million to be spent on the "Fremantle" class building programme in 1980-81.
(f) Orders to be placed for five out of ten additional patrol craft to be built in Australia.
(g) Orders to be placed for 18 light helicopters, twelve for RAN and RAAF training and six for naval survey and utility tasks.
(h) One "Durance" class underway replenishment ship, *(Success)*, ordered from Vickers' Cockatoo Yard with a second to follow.
(i) The replacement of HMAS *Melbourne* to be an aircraft carrier capable of operating helicopters and with a potential for equipping her with STOVL aircraft. The decision on the STOVL aircraft will be made in 1983.

Mercantile Marine

Lloyd's Register of Shipping:
497 vessels of 1 642 594 tons gross

DELETIONS

Ex-Carrier

Sydney	For disposal 20.7.73. Left Sydney for South Korean breakers 23.12.75

Destroyers

Anzac	Left Sydney for Hong Kong 30.12.75
Duchess	Decommissioned 24.10.77 To scrap 9.7.80
Vendetta	Paid off 28.6.79. At Athol Bight.

Frigates

Queenborough *Diamantina*	Left Sydney for Hong Kong 12.5.75 Paid off 23.11.79. At Athol Bight. Now part of Queensland Maritime Museum.

Landing Craft (Heavy)

Buna *Salamaua*	To Papua New Guinea Defence Force 14.11.74

MCM Vessels

Hawk	Sold 1975. Removed 1977
Gull	Sold 1975—Rebuilding as private rescue ship.
Teal	Sold 1978 for conversion to trawler.

Large Patrol Craft

Archer and *Bandolier*	To Indonesia 21.10.74 & 16.11.73
Arrow	Sunk Darwin (Cyclone Tracy) 25.12.74
Aitape, Ladava, Lae, Madang, Samarai	To Papua New Guinea Defence Force 16.9.75

Miscellaneous

Paluma	Sold Commercial 1974
Otter	Sold as fishing boat 1974
Tortoise and *Turtle*	Sold Commercial 1975
Bronzewing (tug)	Sold Commercial 3.6.77
Tug 503	To PNGDF 1974

PENNANT LIST

Submarines

S 57	Oxley
S 59	Otway
S 60	Onslow
S 61	Orion
S 62	Otama
S 70	Ovens

Aircraft Carrier

R 21	Melbourne

Destroyers

D 11	Vampire
D 38	Perth
D 39	Hobart
D 41	Brisbane

Frigates

F 01	Adelaide
F 02	Canberra
F 03	Sydney
D 45	Yarra
D 46	Parramatta
D 48	Stuart
D 49	Derwent
D 50	Swan
D 53	Torrens

Minehunters

M 1102	Snipe
M 1121	Curlew

Minesweeper (Coastal)

M 1183	Ibis

Training Ship

AGT 203	Jervis Bay

Large Patrol Craft

P 81	Acute
P 82	Adroit
P 83	Advance
P 87	Ardent
P 89	Assail
P 90	Attack
P 91	Aware
P 97	Barbette
P 98	Barricade
P 99	Bombard
P 100	Buccaneer
P 101	Bayonet
P 203	Fremantle
P 204	Warrnambool
P 205	Townsville

Large Patrol Craft

P 206	Wollongong
P 207	Launceston
P 208	Whyalla
P 209	Ipswich
P 210	Cessnock
P 211	Bendigo
P 212	Gawler
P 213	Geraldton
P 214	Dubbo
P 215	Geelong
P 216	Gladstone
P 217	Bunbury

Amphibious Heavy Lift Ship

L 50	Tobruk

Landing Craft

L 126	Balikpapan
L 127	Brunei
L 128	Labuan
L 129	Tarakan
L 130	Wewak
L 133	Betano

Survey Ships

A 219	Cook
AGOR 314	Kimbla
A 73	Moresby
A 312	Flinders

Fleet Tanker

AO 195	Supply

Destroyer Tender

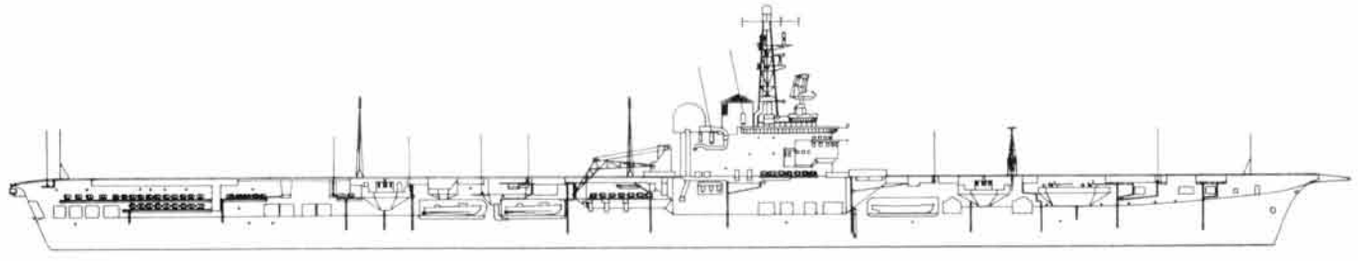
AD 215	Stalwart

General Purpose Ships

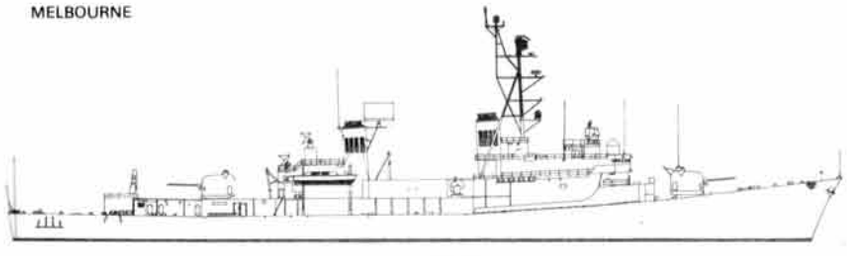
AG 244	Banks
AG 247	Bass

Diving Tenders

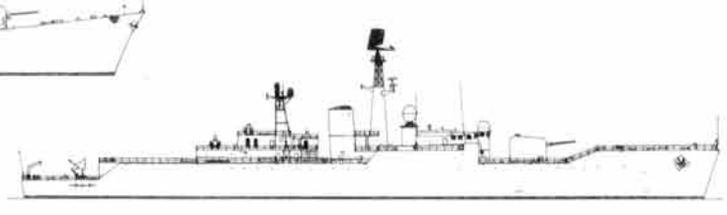
DTV 1001	Seal
DTV 1002	Porpoise



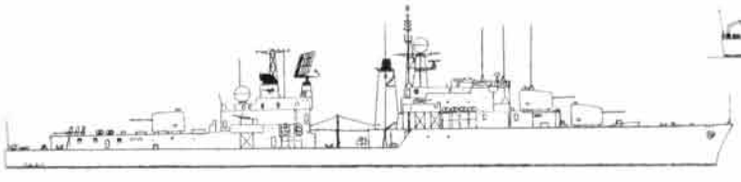
MELBOURNE *1980, Ian Sturton*



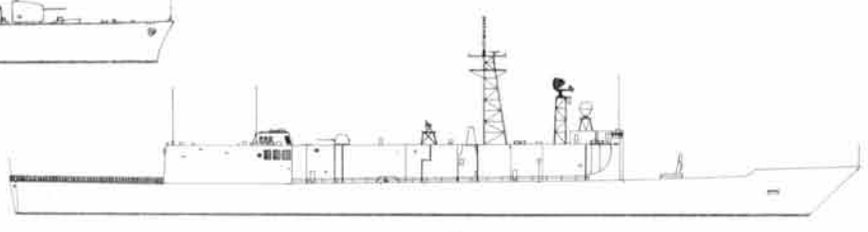
"PERTH" Class



YARRA

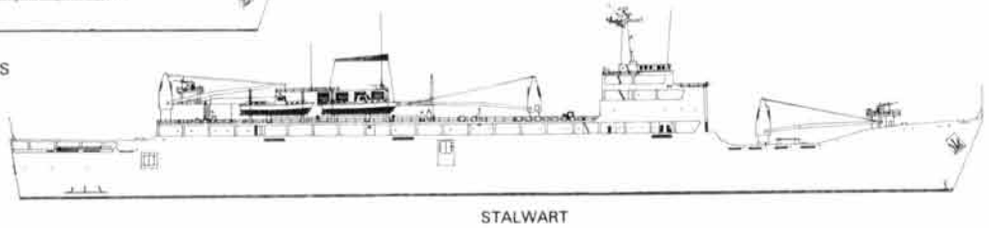


VAMPIRE

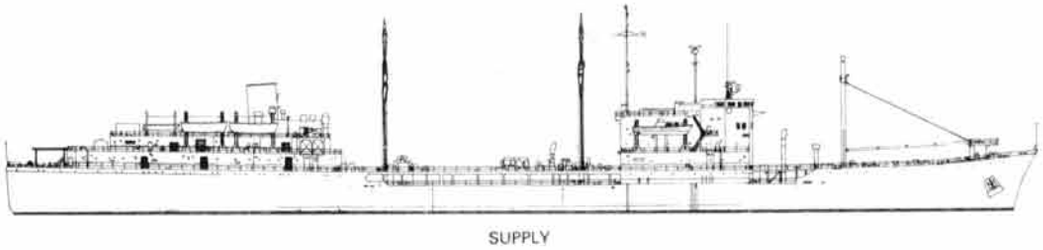


"FFG 7" Class

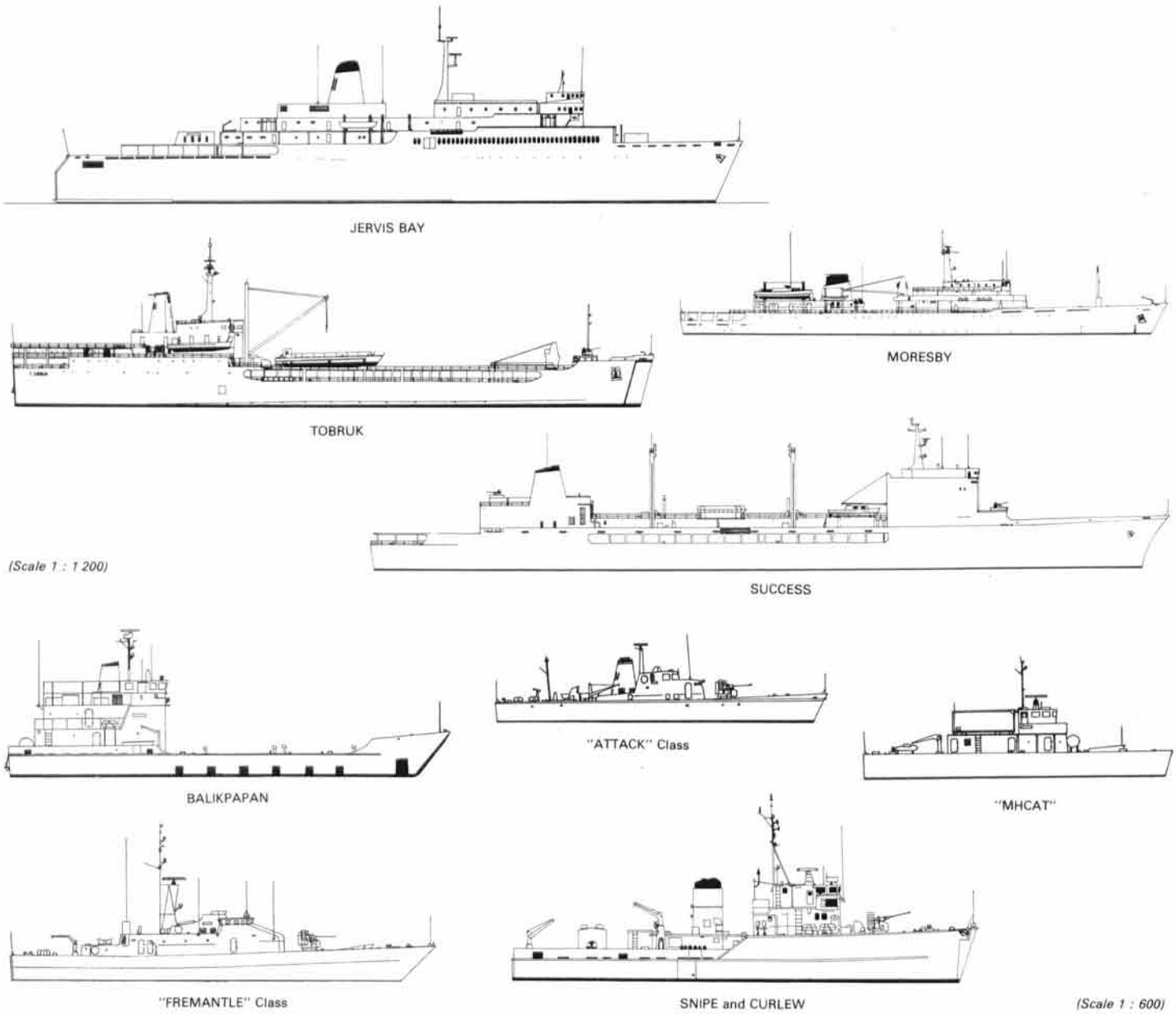
SWAN and TORRENS



STALWART



SUPPLY



(Scale 1 : 1 200)

(Scale 1 : 600)

SUBMARINES

Note: There is no deep diving support ship in service (other than *Seal* and *Porpoise*) or currently planned.

6 "R.A.N. OBERON" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
OXLEY	S 57	Scotts' Shipbuilding & Eng Co Ltd, Greenock	2 July 1964	24 Sep 1965	18 Apr 1967
OTWAY	S 59	Scotts' Shipbuilding & Eng Co Ltd, Greenock	29 June 1965	29 Nov 1966	23 Apr 1968
ONSLOW	S 60	Scotts' Shipbuilding & Eng Co Ltd, Greenock	4 Dec 1967	3 Dec 1968	22 Dec 1969
ORION	S 61	Scotts' Shipbuilding & Eng Co Ltd, Greenock	6 Oct 1972	16 Sep 1974	15 June 1977
OTAMA	S 62	Scotts' Shipbuilding & Eng Co Ltd, Greenock	25 May 1973	3 Dec 1975	27 Apr 1978
OVENS	S 70	Scotts' Shipbuilding & Eng Co Ltd, Greenock	17 June 1966	4 Dec 1967	18 Apr 1969

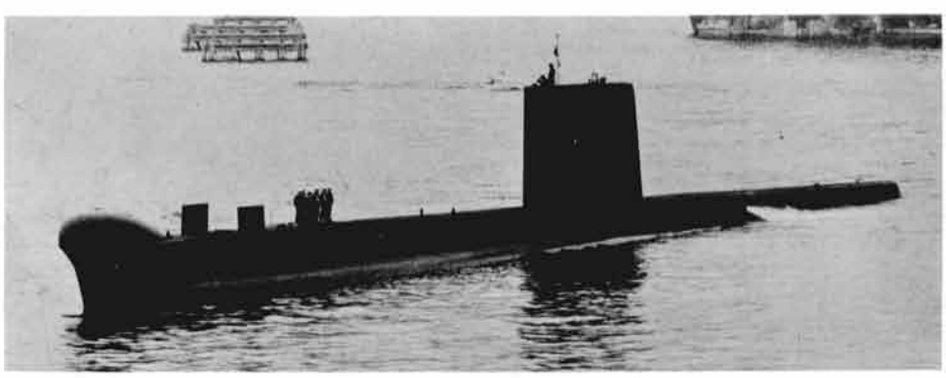
Displacement, tons: 1 610 standard; 2 030 surfaced; 2 410 dived
Dimensions, feet (metres): 295·2 × 26·5 × 18 *(90 × 8·1 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)* (6 bow, 2 stern)
Main machinery: 2 Admiralty Standard Range diesels; 3 680 bhp; 2 shafts; 2 electric motors; 6 000 shp; electric drive
Speed, knots: 16 surfaced; 17 dived; 11 snort
Oil fuel, tons: 300
Range, miles: 9 000 at 10 knots
Complement: 62 (7 officers, 55 sailors)

It was announced by the Minister for the Navy on 22 January 1963 that four submarines of the "Oberon" class were to be built in British shipyards under Admiralty supervision at an overall cost of £A5 million each. These were to constitute the 1st Submarine Squadron RAN based at HMAS Platypus, Neutral Bay, Sydney. Subsequently two more were ordered in October 1971 for delivery in 1975-76 later extended to 1977.

Appearance: The general appearance of this class after modernisation (SWUP) is shown in the drawing alongside.

Dock: Slave Dock (Sydney) was first used in 1974, allowing submarine dockings to be carried out without occupying graving docks continuously.

Modernisation: All submarines are being fitted by Vickers, Cockatoo with the following new equipment:
(a) passive ranging sonar (Micropuffs) from Sperry, USA.
(b) attack sonar (CSU3-41) from Krupp Atlas, West Germany.
(c) fire control system SFCS-RAN-Mk 1 Mod 0 from Singer Librascope, USA.
(d) Mk 48 Mod 8 torpedoes and encapsulated Harpoon missiles.
Oxley: October 1977-November 1979
Otway: January 1979-early 1981
Ovens: March 1980-mid-1982



OXLEY *1980, John Mortimer*

Radar: Type 1006

Sonar: Attack: Type 187C
Intercept: Type 197.
Torpedo warning: Type 719—being removed
Long range passive search: Type 2007
Passive range finding: AN/BQG

AIRCRAFT CARRIER

1 MODIFIED "MAJESTIC" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MELBOURNE (ex-*Majestic*)	R 21	Vickers, Barrow	15 Apr 1943	28 Feb 1945	28 Oct 1955

Displacement, tons: 16 000 standard; 19 966 full load
Dimensions, feet (metres): 630 pp; 701·5 oa × 80·2 (hull) × 25·5 *(192; 213·8 × 24·4 × 7·8)*
Width, feet (metres): 80 *(24·4)* flight deck
126·0 *(38·4)* oa including 6 degree angled deck and mirrors
Hangar, feet (metres): 444 × 52 × 17·5 *(135·3 × 15·8 × 5·3)*
Aircraft: A mix of A4G Skyhawk jet fighters, S2G Tracker A/S aircraft and Sea King Mk 50 A/S helicopters (see *Aircraft* notes)
Guns: 12—40 mm (4 twin, 4 single) Bofors (see Modernisation note)
Boilers: 4 Admiralty 3-drum type
Main engines: Parsons single reduction geared turbines; 2 shafts; 40 000 shp
Speed, knots: 23
Range, miles: 12 000 at 14 knots; 6 200 at 23 knots
Complement: 1 335 (includes 347 Carrier Air Group personnel); 1 070 (75 officers and 995 sailors) as Flagship

At the end of the Second World War, when she was still incomplete, work on this ship was brought to a standstill pending a decision as to future naval requirements. When full-scale work was resumed during 1949-55, and after her design had been re-cast several times, she underwent reconstruction and modernisation in the UK, including the fitting of the angled deck, steam catapult and mirror deck landing sights, and was transferred to the RAN on completion. She was commissioned and renamed at Barrow-in-Furness on 28 October 1955, sailed from Portsmouth on 5 March 1956, and arrived at Fremantle, Australia on 23 April 1956. She became flagship of the RAN in Sydney on 14 May 1956. She cost £A8 309 000.

Aircraft: The aircraft complement formerly comprised eight Sea Venom Mk 53 jet fighters, 16 Gannet Mk 1 turbo-prop A/S aircraft and two Sycamore helicopters. The complement changed twice before 1967 to ten Sea Venoms, ten Gannets, two Sycamores and finally four Sea Venoms, six Gannets and ten Wessex Mk 31 A/S helicopters. 14 S2E Tracker A/S aircraft, eight A4G Skyhawk fighter/strike aircraft and two TA4G Skyhawk trainer aircraft were delivered from the USA in 1967 at a cost of about $A46 million, Squadrons first embarked in *Melbourne* in 1969. Another eight A4G and two TA4G Skyhawk aircraft were delivered in 1971. HS-817 Squadron recommissioned in February 1976 with Sea King Mk 50 A/S helicopters. A general purpose complement embarked in *Melbourne* is eight Skyhawks, four Trackers and five Sea Kings which can be varied to meet various other roles.
Following a hangar fire at NAS Nowra in December 1976 in which all but three S2E Trackers were destroyed 16 ex-US Navy S2G Trackers were purchased and delivered in April 1977.

Electronics: Plessey tactical displays. URN-20 Tacan pod on masthead; Electronic intercept fitted.

Modernisation: *Melbourne* completed her extended refit during 1969 at a cost of over $A8 750 000 to enable her to operate with S2E Tracker and A4G Skyhawk aircraft, and to improve habitability. In 1971 the catapult was rebuilt and a bridle-catcher fitted, and the flight deck was strengthened. Under refit from November 1972 to July 1973. On completion of a major refit in 1976 it was announced that *Melbourne* could remain operational until 1985. It is planned to remove all twin 40 mm during 1981.

Radar: Air surveillance: LW-02 (AIMS Mk 12).
Surface search: Type 293.
Carrier-controlled approach: SPN-35.
Navigation: Type 978.

Replacement: On 9 September 1980 the Government announced that *Melbourne's* replacement would be an aircraft carrier capable of carrying helicopters and with a potential for operating STOVL aircraft. The choice of type will be announced in 1981 and the type of STOVL aircraft to be used (if approved) in 1983. Present reports suggest that the choice of ship may fall on a gas-turbine version of the US Navy "Inchon" class with ski-jump.

MELBOURNE *1980, Royal Australian Navy*

MELBOURNE *1980, P. D. Jones*

DESTROYERS

3 "PERTH" CLASS (DDGs)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PERTH	D 38	Defoe Shipbuilding Co, Bay City, Mich.	21 Sep 1962	26 Sep 1963	17 July 1965
HOBART	D 39	Defoe Shipbuilding Co, Bay City, Mich.	26 Oct 1962	9 Jan 1964	18 Dec 1965
BRISBANE	D 41	Defoe Shipbuilding Co, Bay City, Mich.	15 Feb 1965	5 May 1966	16 Dec 1967

Displacement, tons: 3 370 standard; 4 618 full load
Dimensions, feet (metres): 440·8 × 47·1 × 20·1 *(134·3 × 14·3 × 6·1)*
Missiles: SAM; Standard (40 missiles); 1 single launcher (see *Modernisation* note)
Guns: 2—5 in *(127 mm)*/54 Mk 42 mod 10, single-mount
A/S weapons: 2 single launchers for Ikara system
Torpedo tubes: 6 (2 triple) Mk 32 mod 5 for A/S torpedoes
Main engines: 2 GE double reduction turbines, 2 shafts; 70 000 shp
Boilers: 4 Foster-Wheeler "D" type, 1 200 psi; 950°F
Speed, knots: 30+
Range, miles: 4 500 at 15 knots; 2 000 at 30 knots
Complement: 333 (21 officers, 312 sailors)

On 6 January 1962, in Washington, US defence representatives and Australian military officials (on behalf of the RAN) and executives of the Defoe Shipbuilding Company, of Bay City, Michigan, signed a $A25 726 700 contract for the construction of two guided-missile destroyers (shipbuilding cost only). On 22 January 1963 it was announced by the Navy Minister in Canberra, Australia, that a third guided-missile destroyer was to be built in USA for Australia. The first of their kind for the Australian Navy, they constitute the 1st Destroyer Squadron, RAN. All three ships saw action off Viet-Nam where they served with the US 7th fleet.
Brisbane is the first DS leader.

Cost: Original estimate $A12·8 million to $A14 million each (with missiles and electronics $A40 million each). The total cost of *Perth* was reported to be $A50 million.

Design: Generally similar to the US "Charles F. Adams" class, but they differ by the addition of a broad deckhouse between the funnels enclosing the Ikara anti-submarine torpedo-carrying missile system.

Electronics: URN-20 Tacan; Intercept equipment fitted; URD-4, UHFD/F; Combat data system with UYK-7 computer and Link 11 exchange equipment.

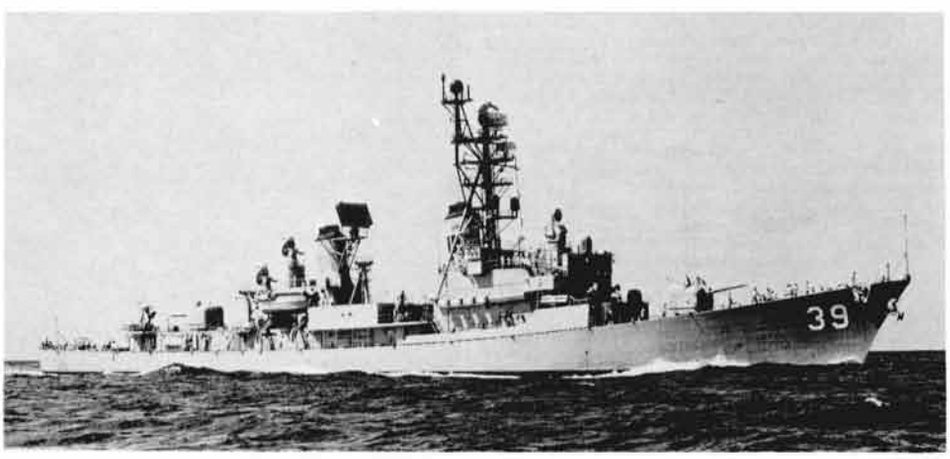
Fire control: Gunnery: GFCS Mk 68 with SPG53A radar.
Missiles: Mk 74 with SPG51C radar and single Mk 13 launcher.

Fuel: *Perth* now uses dieso in place of FFO to which the other two are to be converted.

Missiles: All three to be fitted for Harpoon.

Modernisation: *Perth* started a modernisation at the Long Beach Naval Shipyard on 3 September 1974, completing January 1975. The work included the installation of a Naval Combat Data System, updating of the Tartar missile fire control system, replacing 5-in gun mounts and modernising radars.

BRISBANE *1980, John Mortimer*



HOBART *3/1980, Dr. Giorgio Arra*

Hobart completed her modernisation at Garden island Dockyard in April 1978, and *Brisbane*'s started late 1977 and was completed mid-1979. *Hobart*'s gun mounts were replaced in the USA in 1972 and *Brisbane*'s replacement was completed at Garden Island in October 1976. This gunnery alteration includes deletion of local surface fire control with increased reliability.

Radar: Three dimensional: SPS 52B.
Air search: SPS 40C.
Surface search: SPS 10F.
Navigation: Type 975.
IFF: AIMS Mk 12.

Sonar: SQS 23F; UQC 1D; UQN 1.

PERTH *1980, John Mortimer*

1 "DARING" CLASS (DD)

Name	No.	Builders	Laid down	Launched	Commissioned
VAMPIRE	D 11	Cockatoo Island Dockyard, Sydney	1 July 1952	27 Oct 1956	23 June1959

Displacement, tons: 2 800 standard; 3 600 full load
Dimensions, feet (metres): 388·5 × 43 × 12·8
(118·4 × 13·1 × 3·9)
Guns: 6—4·5 in *(115 mm)*/45 (twin Mk 6);
2—40 mm/60 (single Mk 9)
A/S weapons: 1—3-barrelled Limbo mortar
Main engines: English Electric geared turbines; 2 shafts; 54 000 shp
Boilers: 2 Foster-Wheeler; 650 psi; 850°F
Speed, knots: 30·5
Range, miles: 3 700 at 20 knots
Oil fuel, tons: 584
Complement: 320 (14 officers, 306 sailors)

Vampire is the last of a class which were the largest destroyers ever built in Australia to a modified "Daring" design. They were ordered in 1946. Their sister ship, *Voyager,* the prototype of the class, collided with the aircraft carrier *Melbourne* and sank off the southern coast of New South Wales on the night of 10 February 1964. She was replaced by the British destroyer *Duchess,* lent to Australia by the UK for four years on 8 May 1964, later extended to 1971, purchased by RAN in 1972 and decommissioned in 1977. *Vendetta* decommissioned October 1979.
Vampire joined *Jervis Bay* to form a training squadron in mid-1980 and no longer has her leader's black funnel top. Will remain as training ship until at least early 1982.

Modernisation: *Vampire* completed in December 1971. The $A20 million programme included new Mk 22 fire control systems, new LW-02 air-warning and navigation radars, new action-information centre, modernised communications, fitting modernised turrets, improved habitability, the fitting of an enclosed bridge and new funnels. The work was carried out by Williamstown Dockyard.

Radar: Air surveillance: LW-02.
Surface-search, target indication and fire control: M22 series.
Surface-search and navigation: 8GR-301A.

Sonar: Types 162, 170, 174 and 185.

VAMPIRE *9/1978, John Mortimer*

FRIGATES

Note: It is planned to build two more ships of a modified FFG 7 type at Williamstown after that yard has been modernised, with options on long-lead items for a further four.

2 + 2 US "FFG 7" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ADELAIDE	F 01	Todd Pacific Shipyard Corporation, Seattle, USA	29 July 1977	21 June 1978	15 Nov 1980
CANBERRA	F 02	Todd Pacific Shipyard Corporation, Seattle, USA	1 Mar 1978	1 Dec 1978	8 Mar 1981
SYDNEY	F 03	Todd Pacific Shipyard Corporation, Seattle, USA	16 Jan 1980	26 Sep 1980	8 Jan 1983
DARWIN	F 04	Todd Pacific Shipyard Corporation, Seattle, USA	30 June 1981	31 Mar 1982	Apr 1984

Displacement, tons: 3 678 full load
Dimensions, feet (metres): 445 × 45 × 24·5
(135·6 × 13·7 × 7·5)
Aircraft: 2 helicopters (type to be decided)
Missiles: SSM; Harpoon; SAM—Standard (total of 30 missiles); 1 single Mk 13 Mod 4 launcher
Gun: 1—3 in *(76 mm)*/62 (single Mk 75) (see note); provision for Phalanx PDWS
A/S weapons: 6 (2 triple) Mk 32 torpedo tubes
Main engines: 2 GE LM 2 500 gas turbines; 40 000 shp; 1 shaft (cp propeller)
Speed: 29
Range, miles: 4 500 at 20 knots
Complement: 186

Two ordered from USA in February 1976 for delivery 1980-81. Third ordered November 1977 for delivery in 1982. Fourth ordered January 1980. Space and weight reserved for PDWS in *Sydney* and *Darwin*. US Numbers—*Adelaide,* FFG-17; *Canberra,* FFG-18; *Sydney,* FFG-35; *Darwin* FFG-44.

Financial: $414 million for *Adelaide* and *Canberra* (January 1977 price). *Sydney* to cost $186 million (August 1977 price). *Darwin* to cost $280 million (January 1980 price).

Fire control: Mk 92/STIR gun and missile control.

Gunnery: The Mk 75 is an OTO-Melara Compact manufactured in USA under licence.

Radar: Long range air search and early warning: SPS 49.
Search and navigation: SPS 55.
IFF: AIMS Mk 12.

Sonar: SQS 56.

Trials: *Adelaide* began trials 19 August 1980 and acceptance trials 6 October 1980.

ADELAIDE *1980, Royal Australian Navy*

6 "RIVER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
YARRA	D 45	HMA Naval Dockyard, Melbourne	9 Apr 1957	30 Sep 1958	27 July 1961
PARRAMATTA	D 46	Cockatoo Island Dockyard, Sydney	3 Jan 1957	31 Jan 1959	4 July 1961
STUART	D 48	Cockatoo Island Dockyard, Sydney	20 Mar 1959	8 Apr 1961	28 June 1963
DERWENT	D 49	HMA Naval Dockyard, Melbourne	16 June 1958	17 Apr 1961	30 Apr 1964
SWAN	D 50	HMA Naval Dockyard, Melbourne	18 Aug 1965	16 Dec 1967	20 Jan 1970
TORRENS	D 53	Cockatoo Island Dockyard, Sydney	18 Aug 1965	28 Sep 1968	19 Jan 1971

Displacement, tons: 2 100 standard; 2 700 full load
Dimensions, feet (metres): 360 wl; 370 oa × 41 × 17·3 (screws) *(109·8; 112·8 × 12·5 × 5·3)*
Missiles SAM; Quad Seacat
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6)
A/S weapons: 1 launcher for Ikara system; 1 Australian Mk 10 3-barrelled DC mortar (not *Yarra*)
Main engines: 2 double reduction geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox; 550 psi; 850°F
Speed, knots: 30
Range, miles: 3 400 at 12 knots
Complement: 247 (13 officers, 234 sailors) in *Swan* and *Torrens*; 250 (13 officers, 237 sailors) in other four ships

The design of the first four is basically similar to that of British "Type 12", the last pair to that of the "Leander" frigates. All are modified by the RAN to incorporate improvements in equipment and habitability. *Stuart* was the first ship fitted with the Ikara anti-submarine guided missile; (trial ship for the system). *Derwent* was the first RAN ship to be fitted with Seacat. Note difference in silhouette between *Swan* and *Torrens* and the earlier ships of the class, the former pair having a straight-run upper deck. *Torrens* is leader for the frigate squadron.

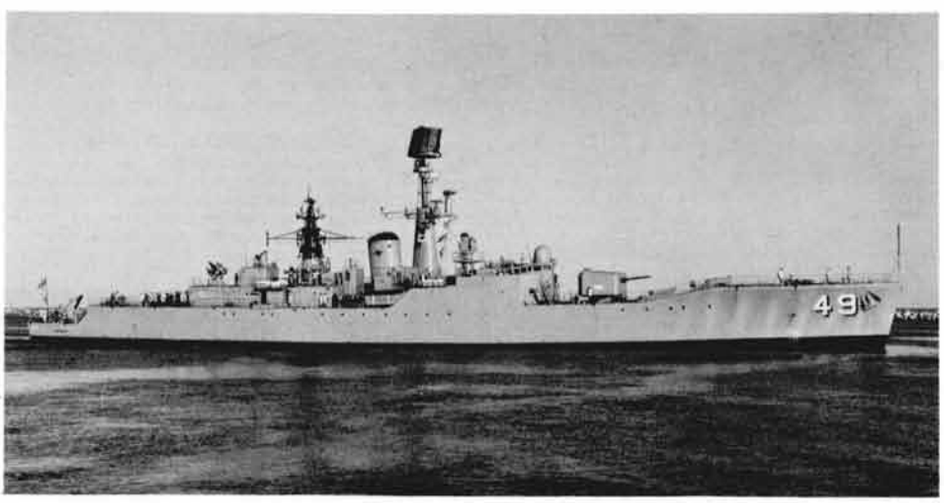
Modernisation: *Stuart* and *Derwent* are undergoing half-life modernisation at Williamstown. Work on *Parramatta* began in June 1977. This programme includes improved accommodation consequent on reduction in complement, installation of M22 gunnery direction system, the fitting of Australian Mulloka sonar (provided the set goes into production), the conversion of the boilers to burn diesel fuel, installation of Mk 32 torpedo tubes in lieu of Mk 10 mortar and new navigation radar. *Yarra* has been fitted with Mulloka sonar, trials beginning in April 1975. In October 1976 she started a half-life refit at Cockatoo Island Dockyard and rejoined the Fleet in December 1977. Her Mk 10 mortar was removed during refit; the well has been plated over and a helicopter deck provided. *Derwent*'s stern resembles that of *Yarra* and *Parramatta*.
Stuart started modernisation March 1979, now due to complete mid-1982. *Derwent* due to start in 1981. *Swan* and *Torrens* modernisation delayed but will be to a different pattern.

Radar: Air surveillance: LW-02 (all ships) (with AIMS Mk 12).
Surface search: Type 293 (first four).
Navigation: Type 978 (first four).
Surface search, target indication and fire control: M22 (last pair and to be fitted in *Yarra*).
Surface search and navigation: 8GR-301 (last pair).

Note: Type 293 to be replaced by SPS 55 at half-life modernisation and Type 293 and MRS3 by M22 at same time.

Sonar: Types 162, 170, 177M, 185.

YARRA *1980, Royal Australian Navy*



DERWENT (modified stern) *1980, M. R. Dippy*

SWAN (TORRENS similar) *1980, John Mortimer*

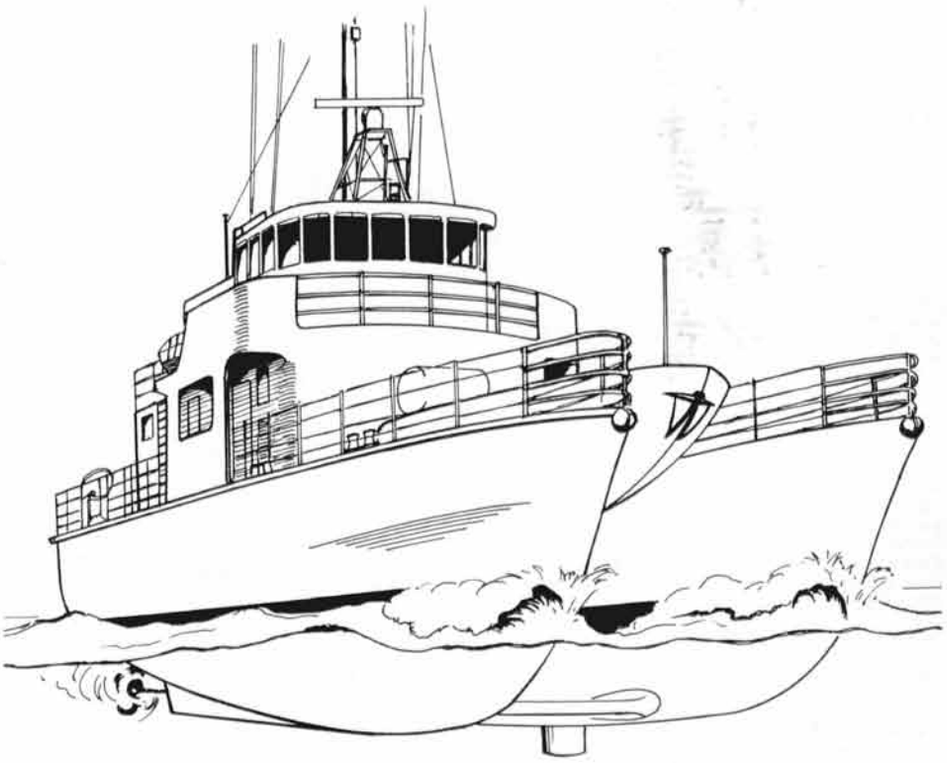
MINE WARFARE FORCES

Note: In addition to the catamaran type below designed for inshore and minehunting duties the RAN is considering the purchase or building of two larger vessels for off-shore sweeping. These would be based on present Australian built oil-rig support vessels. It is presumed that these would be the prototypes for a larger class—12 would probably be the very minimum needed.

0 + 2 + 6? MINEHUNTER CATAMARAN (MHCAT)

Displacement, tons: 105
Length, feet (metres): 98·4 *(30)*

Tenders for two prototypes of this totally new concept of minehunters were issued in November 1980. If the prototypes are successful a further six would be ordered.



MHCAT *1980, RAN drawing*

3 BRITISH "TON" CLASS (MODIFIED)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SNIPE (ex-HMS *Alcaston*)	M 1102	Thornycroft	1952	5 Jan 1953	1953
CURLEW (ex-HMS *Chediston*)	M 1121	Montrose S.Y.	1952	6 Oct 1953	1954
IBIS (ex-HMS *Singleton*)	M 1183	Montrose S.Y.	1952	23 Nov 1955	1956

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·3 × 8·5 × 2·5)*
Guns: *Ibis* 2—40 mm; *Curlew* and *Snipe* 1—40 mm
Main engines: Napier Deltic diesels; 2 shafts; 3 000 bhp = 15 knots
Range, miles: 2 300 at 13 knots; 3 500 at 8 knots
Complement: *Ibis* 34 (4 officers; 30 sailors); *Curlew* and *Snipe* 38 (3 officers, 35 sailors)

"Ton" class coastal minesweepers. Six purchased from the UK in 1961, and modified in British Dockyards to suit Australian conditions. Turned over to the RAN, commissioned and renamed on 21 August, 7 September and 11 September 1962, respectively. Mirlees diesels were replaced by Napier Deltic, and ships air-conditioned and fitted with stabilisers. Sailed from Portsmouth to Australia on 1 October 1962. Constitute the 1st Mine Countermeasures Squadron. *Curlew* and *Snipe* have been converted into minehunters—*Curlew* 26 June 1967 to 13 December 1968 and *Snipe* 10 April 1969 to 18 December 1970. All due to be deleted about 1983.

Radar: Type 975 I-band.

Sonar: Type 193 (except *Ibis*).

SNIPE *8/1980, Graeme Andrews*

LIGHT FORCES

Note: A Defence Committee has recommended a class of Second Degree patrol boats for detailed coastal inspection. It is not known whether this is the same type of vessel as the corvette/large patrol boat class which is reported as currently under study or whether this will be a significantly smaller type such as the De Havilland "Carpentaria".

4 + 11 + 5 + (5) "FREMANTLE" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
FREMANTLE	P 203	Brooke Marine, Lowestoft	11 Nov 1977	15 Feb 1979	17 Mar 1980
WARRNAMBOOL	P 204	North Queensland Eng. and Agents, Cairns	30 Sep 1978	25 Oct 1980	Mar 1981
TOWNSVILLE	P 205	North Queensland Eng. and Agents, Cairns	1979	1980	1981
WOLLONGONG	P 206	North Queensland Eng. and Agents, Cairns	1979	1980	1981
LAUNCESTON	P 207	North Queensland Eng. and Agents, Cairns	1979	1981	1982
WHYALLA	P 208	North Queensland Eng. and Agents, Cairns	Feb 1981	—	—
IPSWICH	P 209	North Queensland Eng. and Agents, Cairns	Feb 1981	—	—

To be laid down mid 1981-85 at Cairns:-
CESSNOCK, BENDIGO, GAWLER, GERALDTON, DUBBO, GEELONG, GLADSTONE, BUNBURY
(To be numbered P 210-P 217)

Displacement, tons: 220
Dimensions, feet (metres): 137·1 × 23·3 × 5·9 *(41·8 × 7·1 × 1·8)*
Gun: 1 Mk VII 40/60 Bofors
Main engines: 2 MTU 16V 538 TB91 diesels; 6 000 hp = 30 knots; 1 Dorman diesel on centre line for cruising at 8 knots; 3 shafts
Range, miles: 1 450 at 30 knots; 4 800 cruising
Complement: 22 (3 officers, 19 sailors)

The decision to buy these new "PCF 420" class patrol craft was announced in September 1977. The design is by Brooke Marine Ltd, Lowestoft who have built the lead ship, the remainder being built by North Queensland Engineers and Agents Pty Ltd, Cairns.
Orders for a further five patrol craft with five more to follow were announced in August 1980. Five may be transferred to Papua-New Guinea.

Costs: $A9 million per ship (January 1980 prices)

Sonar: None fitted.

Trials: The actual tonnage of *Fremantle* and the first three Australian-built ships appears to be 20 tonnes more than designed. It has also been reported that problems have been experienced in flooding-back through the engine exhausts.

FREMANTLE *9/1980, John Mortimer*

12 "ATTACK" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ACUTE	P 81	Evans Deakin Ltd	Apr 1967	26 Aug 1967	26 Apr 1968
ADROIT	P 82	Evans Deakin Ltd	Aug 1967	3 Feb 1968	17 Aug 1968
ADVANCE	P 83	Walkers Ltd, Maryborough, Queensland	Mar 1967	16 Aug 1967	24 Jan 1968
ARDENT	P 87	Evans Deakin Ltd	Oct 1967	27 Apr 1968	26 Oct 1968
ASSAIL	P 89	Evans Deakin Ltd	Aug 1967	18 Nov 1967	12 July 1968
ATTACK	P 90	Evans Deakin Ltd	Sep 1966	8 Apr 1967	17 Nov 1967
AWARE	P 91	Evans Deakin Ltd	July 1967	7 Oct 1967	21 June 1968
BARBETTE	P 97	Walkers Ltd, Maryborough, Queensland	Nov 1967	10 Apr 1968	16 Aug 1968
BARRICADE	P 98	Evans Deakin Ltd	Dec 1967	29 June 1968	26 Oct 1968
BOMBARD	P 99	Walkers Ltd, Maryborough, Queensland	Apr 1968	6 July 1968	5 Nov 1968
BUCCANEER	P 100	Evans Deakin Ltd	June 1968	14 Sep 1968	11 Jan 1969
BAYONET	P 101	Walkers Ltd, Maryborough, Queensland	Oct 1968	6 Nov 1968	22 Feb 1969

Displacement, tons: 146 full load
Dimensions, feet (metres): 107·5 × 20 × 7·3 *(32·8 × 6·1 × 2·2)*
Guns: 1—40 mm/70 (single Mk 7); 2 medium MGs
Main engines: Paxman 16 YJCM diesels; 3 500 hp; 2 shafts = 21-24 knots
Range, miles: 1 220 at 13 knots
Complement: 19 (3 officers, 16 sailors)

Steel construction. Ordered in November 1965. First vessel was originally scheduled for delivery in August 1966, but was not launched until March 1967. Cost $A800 000 each.
This class will begin to pay off in 1981-83. Some may be refitted and transferred to reserve training.

Deployment: 1st PB Squadron (Sydney)—83, 99 and 100.
2nd PB Squadron (Cairns)—97, 98 and 101.
3rd PB Squadron (Darwin)—82, 87, 89 and 91.
Leeuwin—81
Cerberus—90
Note: 83, 90 and 100 transferred temporarily to Bass Strait oil rig patrol.

Disposals: *Bandolier* transferred to Indonesia after refit 16 November 1973. *Archer* transferred 21 October 1974. *Aitape, Ladava, Lae, Madang, Samarai* transferred to Papua New Guinea Defence Force 16 September 1975.

Radar: Type RM 916.

BOMBARD *1980, John Mortimer*

AMPHIBIOUS FORCES

1 AMPHIBIOUS HEAVY LIFT SHIP

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TOBRUK	L 50	Carrington Slipways Pty Ltd	7 Feb 1978	1 Mar 1980	Jan 1981

Displacement, tonnes: 5 800
Dimensions, feet (metres): 417 × 60 × 16 *(127 × 18·3 × 4·9)*
Aircraft: Wessex 31B helicopters
Landing craft: 2 LCVP at davits; 2 LCM8 can be carried on deck
Guns: 2—40 mm
Main engines: 2 Mirrlees Blackstone diesels; 9 600 hp = 17 knots
Complement: 130
Troops: 350-500

A contract to build an Amphibious Heavy Lift Ship in Australia was let in November 1977. The design is an update of the British "Sir Bedivere" class and provides facilities for the operation of helicopters, landing craft, amphibians or side carried pontoons for ship-to-shore movement. A special feature is the ship's heavy lift derrick system for handling heavy loads. The LSH is able to embark a squadron of Leopard tanks plus a number of wheeled vehicles and artillery in addition to its troop lift. A comprehensive communication fit and minor hospital facilities are provided.
Completion delayed from June 1980 by late arrival of certain equipment.

Cargo capacity: 1 300 tons.

TOBRUK (at launching) *3/1980, Royal Australian Navy*

Derrick: 70 tons capacity.

Radar: KH 1006 and RM 916.

6 LANDING CRAFT (HEAVY) (LCH)

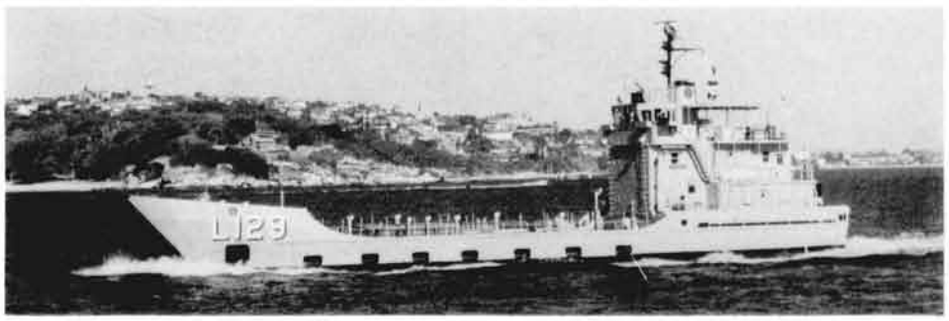
Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BALIKPAPAN	L 126	Walkers Ltd, Maryborough, Queensland	May 1971	15 Aug 1971	8 Dec 1971
BRUNEI	L 127	Walkers Ltd, Maryborough, Queensland	July 1971	15 Oct 1971	5 Jan 1973
LABUAN	L 128	Walkers Ltd, Maryborough, Queensland	Oct 1971	29 Dec 1971	9 Mar 1973
TARAKAN	L 129	Walkers Ltd, Maryborough, Queensland	Dec 1971	16 Mar 1972	15 June 1973
WEWAK	L 130	Walkers Ltd, Maryborough, Queensland	Mar 1972	18 May 1972	10 Aug 1973
BETANO	L 133	Walkers Ltd, Maryborough, Queensland	Sep 1972	5 Dec 1972	8 Feb 1974

Displacement, tons: 310 light; 503 full load
Dimensions, feet (metres): 146 × 33 × 6·5 *(44·5 × 10·1 × 2)*
Guns: 2—·5 in MGs
Main engines: 2 General Motors diesels; twin screw = 10 knots
Range, miles: 3 000 at 10 knots
Complement: 16

Originally this class was ordered for the Army with whom *Balikpapan* remained until June 1974 being commissioned for naval service on 27 September 1974. All now transferred to RAN. Can carry three medium tanks.
Labuan is used for reserve training at HMAS *Moreton*.

PNGDF: *Buna* and *Salamaua* transferred to Papua New Guinea Defence Force in November 1974.

Radar: RM 916.



TARAKAN *8/1980, Graeme Andrews*

OCEANOGRAPHIC AND SURVEY SHIPS

Note: The 1976 Defence White Paper stated plans to build two more survey ships and six large survey launches although no orders for the ships have yet been placed. One of the ships will probably be of the "Flinders" class. Four of the six survey launches are to be built at Williamstown.

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
COOK	A 219	HMA Naval Dockyard, Williamstown	30 Sep 1974	27 Aug 1977	28 Oct 1980

Displacement, tons: 1 900 standard; 2 450 full load
Dimensions, feet (metres): 316·7 × 44 × 15·1 *(96·6 × 13·4 × 4·6)*
Main engines: Diesels; 2 shafts; 3 400 bhp
Speed, knots: 17
Oil fuel, tons: 640
Range, miles: 11 000 at 14 knots
Complement: 150 including 13 scientists

Replaced *Diamantina*. She has dual hydrographic and oceanographic roles. The after part of the ship contains research equipment and facilities. Accommodation for 13 scientists. One survey launch. Specialised oceanographic gear will include a data logger, three oceanographic winches, wet laboratory, dry laboratory, magnetometer and gravimeter. No helicopter.
Commissioning delayed by ten months as her completion clashed with frigate refits etc. Even so six years is an exceptionally long period for building such a ship, due in part to retrofitting of much equipment and the inclusion of many new hull openings.

Armament: In wartime could mount two twin 30 mm and four machine guns.

Radar: TM 829.

Sonar: Simrad SU2.

Surveying equipment: Hi-Fix 6; Mini-Ranger MRS3; Atlas Deso 10 and Harris Narrow-Beam echo-sounders.

Trials: Sea trials began in November 1980.

COOK *7/1979, Graeme Andrews*

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MORESBY	A 73	State Dockyard, Newcastle, NSW	June 1961	7 Sep 1963	6 Mar 1964

Displacement, tons: 1 714 standard; 2 351 full load
Dimensions, feet (metres): 314 × 42 × 15 *(95·7 × 12·8 × 4·6)*
Aircraft: 1 Bell 206B-1 (Kiowa) helicopter
Guns: 2—40 mm Bofors (single) (removed)
Main engines: Diesel-electric; 3 diesels; 3 990 bhp; 2 electric motors; 2 shafts = 19 knots
Complement: 135

The RAN's first specifically designed survey ship. Built at a cost of £A2 million ($A4 million). Guns are not currently embarked.

Deployment: Based on *Stirling* (Cockburn Sound W.A.).

Radar: TM 829.

Refit: During refit from 13 August 1973 to 18 January 1974 *Moresby's* funnel was heightened, her 40 mm guns removed and an exhaust outlet fitted on her forecastle.

MORESBY *1977, Royal Australian Navy*

Sonar: Simrad SU2.

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
FLINDERS	A 312	HMA Naval Dockyard, Williamstown	11 June 1971	29 July 1972	27 Apr 1973

Displacement, tons: 750
Dimensions, feet (metres): 161 × 33 × 12 *(49·1 × 10 × 3·7)*
Main engines: 2 Paxman Ventura diesels; 1 680 bhp; 2 shafts; cp propellers
Speed, knots: 13·5
Range, miles: 5 000 at 9 knots
Complement: 38 (4 officers, 34 sailors)

Similar in design to *Atyimba* built for the Philippines. *Flinders* is based at Cairns, with her primary responsibility in the Barrier Reef area.

Radar: TM 829.

Sonar: Simrad SU2.

FLINDERS *1976, Royal Australian Navy*

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KIMBLA	AGOR 314	Walkers Ltd, Maryborough, Queensland	4 Nov 1953	23 Mar 1955	26 Mar 1956

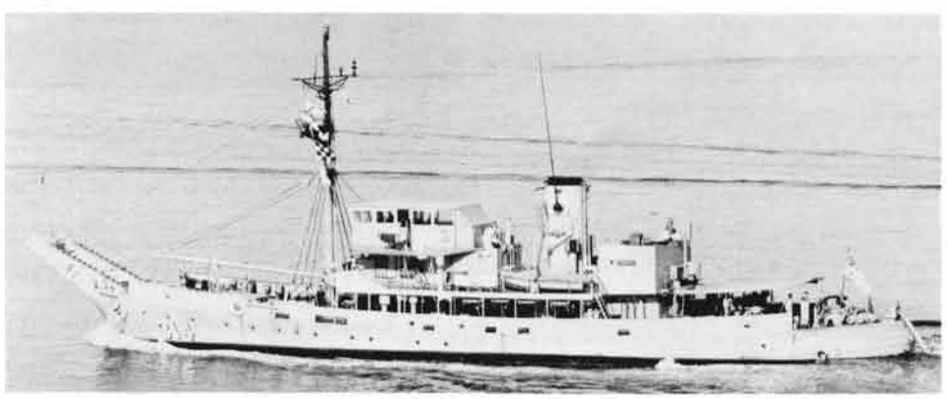
Displacement, tons: 762 standard; 1 021 full load
Dimensions, feet (metres): 179 × 32 × 12 *(54·6 × 9·8 × 3·7)*
Main engines: Triple expansion; 1 shaft; 850 ihp
Speed, knots: 9·5
Complement: 40 (4 officers, 36 sailors)

Built as a boom defence vessel. Converted to trials vessel in 1959. Guns were removed (one 40 mm; two 20 mm). She was due for replacement about 1980, but will probably have to remain in service until a new ship is available. No plans announced for her replacement although a "Flinders" class would be suitable.

Appearance: Enclosed bridge fitted mid-1977.

Radar: Type 975.

Sonar: Simrad SU2.



KIMBLA *1980, John Mortimer*

SERVICE FORCES

1 DESTROYER TENDER

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
STALWART	AD 215	Cockatoo Island D.Y., Sydney	June 1964	7 Oct 1966	9 Feb 1968

Displacement, tons: 10 000 standard; 15 500 full load
Dimensions, feet (metres): 515·5 × 67·5 × 29·5 *(157·1 × 20·6 × 9)*
Aircraft: 1 helicopter (normally Wessex 31B)—capacity for 2
Missiles: Provision for Seacat
Guns: 4—40 mm (2 twin)
Main engines: 2 Scott-Sulzer 6-cyl diesels, 2 shafts; 14 400 bhp
Speed, knots: 20+
Range, miles: 12 000 at 12 knots
Complement: 396 (23 officers and 373 sailors)

Largest naval vessel designed and built in Australia. Ordered on 11 September 1963. Designed to maintain destroyers and frigates, and advanced weapons systems, including guided missiles. She has a helicopter flight deck and a hangar, being capable of operating two Wessex 31B or two Sea King Mk 50 helicopters. High standard of habitability. Formerly rated as Escort Maintenance Ship. Redesignated Destroyer Tender in 1968. Cost officially estimated at just under $A15 million.

STALWART *1980, P. D. Jones*

0 + 1 + 1 "DURANCE" CLASS (UNDERWAY REPLENISHMENT TANKERS)

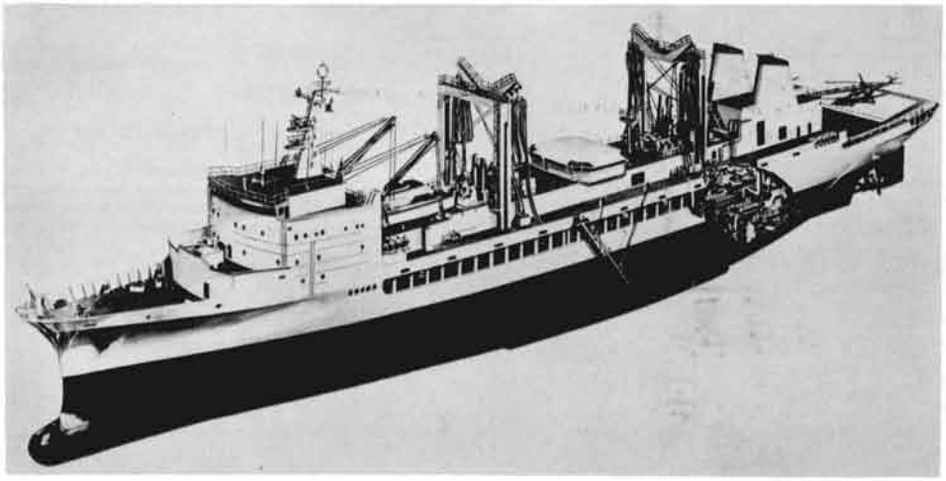
Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SUCCESS	AOR 1	Vickers', Builders Cockatoo Dockyard	9 Aug 1980	1982	1983
—	AOR 2	Vickers', Builders Cockatoo Dockyard	—	—	—

Displacement, tons: 17 800 full load
Dimensions, feet (metres): 515·9 × 69·5 × 28·5
(157·3 × 21·2 × 8·7)
Aircraft: 1 helicopter
Guns: 2—40 mm
Main engines: 2 diesels; 20 500 hp; 2 shafts = 19 knots
Oil fuel, tons: 750
Range, miles: 9 000 at 15 knots
Complement: 187

Second of class to be ordered soon. Cost for *Success* $A68 million (1978 prices).

Capacity: 10 000 tonnes: 7 500 FFO, 1 500 dieso, 500 Avcat, 130 distilled water, 170 victuals, 150 munitions, 50 naval stores.

Transfer: Four beam positions (two having heavy transport capability) and one astern.



"DURANCE" Class — *1980, Royal Australian Navy*

1 "TIDE" CLASS (FLEET TANKER)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SUPPLY (ex-*Tide Austral*)	AO 195	Harland and Wolff, Belfast	5 Aug 1952	1 Sep 1954	Mar 1955

Displacement, tons: 15 000 standard; 25 941 full load
Measurement, tons: 17 600 deadweight; 11 200 gross
Dimensions, feet (metres): 550 pp; 583 oa × 71 × 32
(167·6; 177·8 × 21·7 × 9·8)
Guns: 2—40 mm (single)
Main engines: Double reduction geared turbines; 15 000 shp
Speed, knots: 17·25
Range, miles: 8 500 at 13 knots
Complement: 205

British "Tide" Class. Lent to the UK until 1 September 1962, when *Tide Austral* was re-named *Supply* and commissioned in the RAN at Portsmouth on 15 August 1962. Sailed for Australia 1 October 1962. Bridge was rebuilt in 1973-74.

Radar: RM 916.

Refit: In 1979 refit forward guns were removed, new radar fitted and the midships gantries removed.

SUPPLY (forward guns now removed) — *10/1977, Graeme Andrews*

TRAINING SHIP

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
JERVIS BAY (ex-*Australian Trader*)	AGT 203	State Dockyard, Newcastle, NSW	18 Aug 1967	17 Feb 1969	17 June 1969 (completion)

Displacement, tons: 8 915 full load
Dimensions, feet (metres): 445·1 × 70·6 × 20·1
(135·7 × 21·5 × 6·1)
Main engines: 2—16PC 2V 400 Crossley Pielstick diesels; 2 shafts; 13 000 bhp
Speed, knots: 19·5
Fuel: 820·3 tons
Complement: 108 plus 40+ trainees

The former roll-on roll-off ship MV *Australian Trader* was purchased on 26 January 1977 for $A5·07 million from the Australian National Line and commissioned in the RAN on 25 August 1977. A contract for $A720,000 for conversion of the ship to its new role was let to the Sydney firm of Storey and Keers (Ship Repairs) Pty Ltd in October 1977. Conversion work included the construction of a navigation training bridge on top of the existing bridge, and conversion of some cabins into a classroom. Fitted with bow thruster. *Jervis Bay* made her first cruise as a training ship in February 1978. The ship's primary role is navigation training for the RAN, although her vehicle and cargo carrying capability have been retained. In mid-1980 joined with *Vampire* to form the training squadron.

Radar: KH 1006.

JERVIS BAY — *1980, John Mortimer*

GENERAL PURPOSE VESSELS

Name	*No.*	*Builders*	*Commissioned*
BANKS	AG 244	Walkers, Maryborough, Queensland	16 Feb 1960
BASS	AG 247	Walkers, Maryborough, Queensland	25 May 1960

Displacement, tons: 207 standard; 255 and 260 full load respectively
Dimensions, feet (metres): 90 pp; 101 oa × 22 × 8 *(27·5; 30·8 × 6·7 × 2·4)*
Main engines: Diesels; speed = 10 knots
Complement: 14 (2 officers, 12 sailors)

"Explorer" class. Of all steel construction. *Banks* was fitted for fishery surveillance and *Bass* for surveying, but both are used for other duties, including reserve training. *Banks* based in Port Adelaide, *Bass* in Hobart although planned to move to Jervis Bay for officer training. Minor differences—*Bass* has a higher flying bridge with consequent raising of her radar pedestal. Ventilators differ.

BANKS *1977, Graeme Andrews*

GPV 958

75 ft *(22·9 m)* general purpose vessel based at HMAS *Stirling*, W.A.

SDB 1324

80 ft *(24·4 m)* seaward defence boat based at HMAS *Lonsdale*, Victoria.

SDB 1325

80 ft *(24·4 m)* seaward defence boat based at HMAS *Stirling*, W.A.

DIVING TENDERS

Name	*No.*	*Builders*	*Launched*
SEAL (ex-HMS *Wintringham*)	DTV 1001	White, Cowes	24 May 1955
PORPOISE (ex-HMS *Neasham*)	DTV 1002	White, Cowes	14 Mar 1956

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 106·5 × 21·2 × 5·5 *(32·5 × 6·5 × 1·7)*
Main engines: 2 Paxman diesels; 1 100 bhp = 14 knots
Range, miles: 2 000 at 9 knots; 1 500 at 12 knots
Complement: 7 (can accommodate 14 divers)

Purchased from the Royal Navy in 1966-67, these ex-inshore Minesweepers were converted to Diving Tenders and attached to the Diving School at Sydney. HMS *Popham* (Vospers, launched 11 January 1955) also purchased and renamed *Otter* but not converted and was sold in 1974. Carry recompression chambers.

Status: *Seal* entered service in December 1968 and *Porpoise* in 1973. Neither is a commissioned ship but both are tenders to *Penguin*, Sydney, working from *Waterhen* as operational diving training vessels and for navigational training.

SEAL *10/1980, Graeme Andrews*

TUGS

HTS 501 HTS 502 HTS 504

Displacement, tons: 47·5
Dimensions, feet (metres): 50 × 15 × — *(15·2 × 4·6 × –)*
Main engines: 2 General Motors diesels; 340 bhp = 8·9 knots
Complement: 3

First pair with bipod mast funnel built by Stannard Bros, Sydney in 1969 and second pair (including 503) with conventional funnel by Perrin Engineering, Brisbane in 1972.

Transfer: Tug 503 transferred to Papua New Guinea in 1974.

2 Ex-US ARMY TYPE

SARDIUS TB 9 — TB 1536

Of 29 tons GRT (approximately 60 tons, full load), 45 ft long with 240 hp Hercules diesel, capable of 10 knots. Complement 4. *Sardius* employed in Sydney as ammunition-lighter tug, TB 1536 at HMAS *Cerberus* (Victoria). Wooden hulled.

TORPEDO RECOVERY VESSELS

TRV 801 802 803

Displacement, tons: 91·6
Dimensions, feet (metres): 88·5 × 20·9 × 4·5 *(27 × 6·4 × 1·4)*
Main engines: 3 General Motors diesels; 890 hp; triple screws = 13 knots.
Complement: 9 (1 officer, 8 men)

All built at Williamstown—completed between January 1970 and April 1971.

TRV 803 *1979, Graeme Andrews*

AUXILIARIES

3 + (1) SELF-PROPELLED LIGHTERS

Displacement, tonnes: 210 light; 1 100 full load
Dimensions, feet (metres): 124·6 × 32·1 × 12·5 *(38 × 9·8 × 3·8)*
Main engines: 2 Harbourmaster outdrives (1 fwd, 1 aft)
Range, miles: 100

First three were laid down at Williamstown in 1978. The fourth, for HMAS *Stirling*, has not yet been ordered. Total cost $A7 million. To be used for water/fuel transport. Steel hulls with twin swivelling outboard propellers. To replace 50 year old craft now in service.

1 TANK CLEANING VESSEL

Name	*No.*	*Builders*	*Launched*
COLAC	—	Mort's Dock, Sydney	13 Aug 1941

Originally 1 025 ton "Bathurst" class minesweeper. Now a dumb craft, painted black, based in Sydney. Sister ship *Castlemaine*, given by Department of Defence as museum ship to Melbourne in 1973.

1 TRIALS CRAFT

Ex-RAF 63 ft pinnace used in Jervis Bay for trials of Mulloka sonar.

4 MOTOR WATER LIGHTERS

GAYUNDAH (MRL 253), **MWL 254, 256, 257**

Displacement, tons: 300 standard; 600 (app) full load.
Dimensions, feet (metres): 120 × 24 × — *(36·6 × 7·3 × —)*.
Main engines: 2 Ruston and Hornsby diesels; 440 bhp=9·5 knots

Sisters of the earlier survey ship *Paluma*; used for carrying water and stores. *Gayundah* used for reserve training at Melbourne from *Lonsdale*.

1 AIRCRAFT LIGHTER—CATAMARAN

AWL 304

Dimensions, feet (metres): 77·8 × 32 × 6·6 *(23·7 × 9·8 × 2)*

Built at Cockatoo Dockyard 1967-68. Coastal craft. Capacity one S2E Tracker or two A4G Skyhawks. Low wheelhouse forward, sheerlegs aft.

3 CRANE STORES LIGHTERS

CSL 01 02 03

Based on design of AWL 304 but with crane and after superstructure. Built from 1972.

2 Ex-ASR CRAFT

38101 38102

38 ft *(11·5 m)* Bertram craft of little value except in harbour.

WORK BOATS

AWB 400-415 +57

More than 20 are in use all built to a basic 40 ft *(12·2 m)* design.

NWB D1230, 1280 +13

Of 12 tonnes and 39·3 ft *(12 m)* long. Built by North Queensland Engineers and Agents, Cairns of aluminium with varying superstructures.

ARMY WATERCRAFT

18 US LCM(8) CLASS

AB 1050-1061 +6

Displacement, tons: 116 full load
Dimensions, feet (metres): 73·5 × 21 × 3·3 *(22·4 × 6·4 × 1)*
Main engines: 2 General Motors diesels; 600 hp = 9 knots
Range, miles: 140 at 9 knots

Can carry 60 tons of cargo. Built by North Queensland Engineers, Cairns to US design.

AB 1054 *8/1980, Graeme Andrews*

4 LCVP

AB 755 756 758 759

Of 56 ft *(17 m)*. Can carry 120 people.

2 TUGS

JOE MANN THE LUKE

Built in 1964. Of 60 tons with a range of 700 nm and fitted for fire-fighting, the first at Sydney, the second at Brisbane.

7 WORK BOATS

AM 418 AM 419 +5

Similar to naval NWB D 1230 type.

6 METRE "SHARK CAT" CLASS

AM 215 +?

Several of these multi-hulled craft with twin Johnson 200 hp engines.

RAAF

WARANA 016-100

Of 76 ft *(23 m)*, 49 tonnes standard, 22 knots, range 400 nm. Based at Townsville.

AIR VIEW 02-109 AIR SEEK 02-113

Of 63 ft *(19·2 m)*, 23·5 tons standard and 25 knots.

First completed 1942 and second in 1957. *Air Seek* has General Motors diesels and *Air View* Scott Hall petrol engines. Based at Newcastle.

CUSTOMS DEPARTMENT

JABIRU JACANA JERBOA

Built in 1975. Of 17 tonnes, 45·9 ft *(14 m)* with two Cummins diesels; 740 hp = 23 knots.

AUSTRIA

Commanding Officer

Captain Franz Trapl

Diplomatic Representation

Defence Attaché in London:
Colonel M. Trofaier

Personnel

(a) 1981: 1 officer, 13 NCOs, 13 ratings (cadre personnel and national service), plus a small shipyard unit
(b) 6 months' national service plus 2 months a year for 12 years

Base

Marinekaserne Tegetthof, Wien-Kuchelau (under command of Austrian School of Military Engineering)

Mercantile Marine

Lloyd's Register of Shipping:
13 vessels of 88 784 tons gross

RIVER PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
NIEDERÖSTERREICH	A 604	Korneuberg Werft AG	Apr 1970

Displacement, tons: 75
Dimensions, feet (metres): 96·8 × 17·8 × 3·6 *(29·4 × 5·4 × 1·1)*
Guns: 1—20 mm SPz Mk 66 Oerlikon; 1—12·7 mm MG; 1—Mk 42 MG; 2—8·4 cm PAR 66 "Carl Gustav" AT rifles
Main engines: 2 V16 diesels (turbo engines); 1 600 hp = 22 knots
Complement: 9

Fully welded. Only one built of a projected class of twelve. Engines by MWM, Munich.

NIEDERÖSTERREICH *1980, Austrian Government*

Name	*No.*	*Builders*	*Commissioned*
OBERST BRECHT	A 601	Korneuberg Werft AG	—

Displacement, tons: 10
Dimensions, feet (metres): 40·3 × 8·2 × 2·5 *(12·3 × 2·5 × 0·75)*
Gun: 1—12·7 mm MG
Main engines: 2 diesels; 214 bhp = 10 knots
Complement: 5

Welded hull. Engines by Gräf and Stift, Vienna.

OBERST BRECHT *1979, Austrian Government*

10 Ex-US "M3" PATROL CRAFT

	No.	*Builders*	*Commissioned*
4 M3B Type	—	Highway Products and Marine Corporation USA	1965
6 M3D Type	—	Aluminium Co of America	1976

Displacement, tons: 2·9
Dimensions, feet (metres): 27·2 × 8·2 × 6·5 *(8·3 × 2·5 × 2)*
Main engines: M3B—2 Gray Patrol (petrol); 204 hp = 18 knots
M3D—2 General Motors diesels; 184 hp = 18 knots

Unarmed, they form part of the military floating bridge equipment.

"M3" Class *1976, Heeres Film*

BAHAMAS

Senior Officer

Commander Royal Bahamas Defence Force:
Commodore C. W. C. Swinley RBDF

Base

Bay Shore Marina, Nassau

Mercantile Marine

Lloyd's Register of Shipping:
91 vessels of 87 320 tons gross

PATROL CRAFT

1 "103 ft" VOSPER THORNYCROFT

Name	*No.*	*Builders*	*Commissioned*
MARLIN	P 01	Vosper Thornycroft	23 May 1978

Displacement, tons: 96 standard; 109 full load
Dimensions, feet (metres): 103 × 19·8 × 5·5 *(31·4 × 6 × 1·7)*
Guns: 1—20 mm; 2 MGs; 2 flare launchers
Main engines: 2 Paxman 12-cyl Ventura diesels; 3 500 bhp = 27 knots
Range, miles: 2 000 at 13 knots
Complement: 19 (3 officers, 16 men)

Marlin laid down 22 November 1976, launched 20 June 1977. *Flamingo* sunk by Cuban aircraft on 11 May 1980. Reparations of £2·5 million paid by Cuba. Part of a £5 million order placed in 1975 which also included three 60 ft craft.

MARLIN *5/1978, C. and S. Taylor*

7 "60 ft" GRP TYPE

Name	*No.*	*Builders*	*Commissioned*
ACKLINS	P 04	Vosper Thornycroft	5 Mar 1971
ANDROS	—	Vosper Thornycroft	5 Mar 1971
ELEVTHERA	—	Vosper Thornycroft	5 Mar 1971
SAN SALVADOR	—	Vosper Thornycroft	5 Mar 1971
EXUMA	P 25	Vosper Thornycroft	10 Dec 1977
ABACO	P 26	Vosper Thornycroft	10 Dec 1977
INAGUA	P 27	Vosper Thornycroft	10 Dec 1977

Displacement, tons: 30 standard
Dimensions, feet (metres): 60 × 15·8 × 4·6 *(18·3 × 4·8 × 1·4)*
Guns: 1—20 mm fwd; 2 LMG on bridge (first four); 2—20 mm (next three when required)
Main engines: 2 Caterpillar 3408TA diesels = 20 knots (total hp 950—last three)
Range, miles: 650 at 16 knots
Complement: 11

"60 ft" Keith Nelson patrol craft in GRP—the first four were the original units of the Bahamas Police Marine Division. With air-conditioned living spaces, these craft are designed for patrol amongst the many islands of the Bahamas Group. The foredeck is specially strengthened for a 20 mm machine gun with light machine guns in sockets either side of the bridge.

INAGUA *10/1977, Michael D. Lennon*

BAHRAIN

Ministerial

Minister of Defence:
Shaikh Hamad ibn 'Isa Al Khalifa
Minister of the Interior:
Shaikh Mohamad Bin Khalifa Al Khalifa

Personnel

(a) 1981: About 200.
(b) Voluntary service.

Defence Force

The acquisition of the four Lürssen craft is the first stage in the creation of a new naval force.

DELETIONS

Coast Guard

1974 1 Patrol Craft
1975 2 "Spear" class
1977 1 Hovercraft

Coast Guard

This unit is under the direction of the Ministry of the Interior and not Defence.

Mercantile Marine

Lloyd's Register of Shipping:
44 vessels of 10 248 tons

LIGHT FORCES

2 LÜRSSEN TNC 45 TYPE (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 228 (half load)
Dimensions, feet (metres): 147·3 × 22·9 × 7·5 *(44·9 × 7 × 2·3)*
Missiles: SSM; 4 Exocet (single launchers)
Guns: 1—76 mm OTO Melara; 1—40 mm/70 Bofors; 3—7·62 mm MGs
Main engines: 4 diesels; 14 400 hp = 38 knots
Range, miles: 1 600 at 16 knots
Complement: 40

Standard Fr. Lürssen design ordered in 1979.

Fire control: 1 CSEE Panda optical director.

Radar: Probably WM 28 control.

2 LÜRSSEN FPB 38 TYPE (FAST ATTACK CRAFT—GUN)

Displacement, tons: 188 (half load)
Dimensions, feet (metres): 126·3 × 22·9 × 7·2 *(38·5 × 7 × 2·2)*
Guns: 1—40 mm L70 Bofors; 2—20 mm Oerlikon
Main engines: 2 diesels; 9 000 shp = 32 knots
Range, miles: 1 100 at 16 knots

Ordered in 1979.

Fire control: 1 CSEE Lynx optical director with Philip's 9LV 100 optronic FC system.

COAST GUARD

2 PATROL CRAFT

HOWAR **ROUBODH**

Displacement, tons: 32
Dimensions, feet (metres): 56 × 16 × 4·8 *(17·1 × 4·9 × 1·5)*
Main engines: 2 diesels; 900 hp = 29 knots

Built by Vosper Private Ltd, Singapore in 1977.

3 "TRACKER" CLASS

Name	*No.*	*Builders*	*Commissioned*
BAHRAIN	1	Fairey Marine Ltd	1975

Displacement, tons: 31
Dimensions, feet (metres): 64 × 16 × 5 *(19·5 × 4·9 × 1·5)*
Gun: 1—20 mm
Main engines: 2 diesels; 1 120 bhp = 29 knots

All built by Fairey Marine Ltd. The first purchased in 1974, the other two in 1980.

1 "50 ft" CHEVERTON TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MASHTAN	6	Cheverton Ltd, Isle of Wight	1976

Displacement, tonnes: 17·3
Dimensions, feet (metres): 50 × 14·7 × 4·5 *(15·2 × 4·5 × 1·4)*
Main engines: 2 Detroit General Motors 8V1TI diesels = 22 knots
Range, miles: 660 at 12 knots

GRP hull.

1 PATROL CRAFT

JIDA 2

Displacement, tons: 15
Dimensions, feet (metres): 45·5 × 12 × 3 *(13·9 × 3·7 × 0·9)*
Main engines: 2 diesels; 1 080 bhp = 23 knots

Completed February 1974 by Thornycroft, (Singapore).

3 COASTAL PATROL CRAFT

AL-BAYNEH **JUNNAN** **QUAIMAS**

Displacement, tons: 6·3
Dimensions, feet (metres): 36·4 × 10·7 × 2·9 *(11·1 × 3·3 × 0·9)*
Main engine: Sabre diesel 210 = 27 knots

Built by Vosper Private Ltd, Singapore in 1977.

4 FAIREY "SWORD" CLASS

Displacement, tons: 15
Dimensions, feet (metres): 44·9 × 13·4 × 4·3 *(13·7 × 4·1 × 1·3)*

Purchased in 1980. Built by Fairey Marine Ltd.

3 "27 ft" CHEVERTON TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
NOON	15	Cheverton Ltd, Isle of Wight	1977
ASKAR	16	Cheverton Ltd, Isle of Wight	1977
SUWAD	17	Cheverton Ltd, Isle of Wight	1977

Displacement, tons: 3·5
Dimensions, feet (metres): 27 × 9 × 2·8 *(8·2 × 2·7 × 0·8)*
Main engines: Twin diesels = 15 knots

Purchased 1976. In addition ten Dhows are used for patrol duties.

1 60 ft "LOADMASTER"

Name	*No.*	*Builders*	*Commissioned*
SAFRA	7	Cheverton Ltd, Isle of Wight	Dec 1977

Measurement, tons: 60 deadweight
Dimensions, feet (metres): 60 × 20 × 3·5 *(18·3 × 6·1 × 1·1)*
Main engines: 2 diesels; 348 hp = 9 knots
Range, miles: 600
Complement: 13
Load: 45 tonnes

1 HOVERCRAFT

Weight, tons: 2·18 all up
Dimensions, feet (metres): 26·2 × 7·9 × 7·5 *(7·97 × 2·36 × 2·26)*
Main engine: 1 AMC
Speed, knots: 35 (maximum); 25 (cruise)

1 "11 METRE" TUG

Displacement, tons: 12
Main engine: General Motors 6V-71

Purchased in 1981.

BANGLADESH

Headquarters' Appointments

Chief of Naval Staff:
Rear-Admiral Mahbub Ali Khan psn, BN
Assistant Chief of Naval Staff (Material):
Commodore K. M. J. Akbar BN
Assistant Chief of Naval Staff (Logistics):
Captain M. Rahman BN
Assistant Chief of Naval Staff (Personnel):
Captain Sultan Ahmad BN

Senior Appointments

Commodore Commanding Chittagong:
Commodore F. Ahmed BN
NOIC Khulna:
Commander M. S. Huda BN
Senior Naval Officer, Afloat:
Captain M. M. Islam BN

Naval Bases

Chittagong (BNS *Issa Khan* BN Dockyard Complex and Naval Academy), Dacca (BNS *Haji Mohsin*), Khulna (BNS *Titumir*), Kaptai (BNS *Shaheed Moazzam*)

Personnel

(a) 1981: 5 300 (300 officers, 5 000 ratings)
(b) Voluntary service

Strength of the Fleet

Type	*Active*
Frigates	2
Fast Attack Craft (Gun)	4
Large Patrol Craft	5
Riverine Patrol Craft	5
Training Ship	1
Repair Ship	1
Floating Dock	1

Prefix to Ships' Names

BNS

Mercantile Marine

Lloyd's Register of Shipping:
179 vessels of 353 586 tons gross

FRIGATES

1 Ex-BRITISH "SALISBURY" CLASS (TYPE 61)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
UMAR FAROOQ (ex- HMS *Llandaff*)	F 16	Hawthorn Leslie Ltd	27 Aug 1953	30 Nov 1955	11 Apr 1958

Displacement, tons: 2 170 standard; 2 408 full load
Dimensions, feet (metres): 339·8 × 40 × 15·5 (screws) *(103·6 × 12·2 × 4·7)*
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6); 2—40 mm/60 (single Mk 9)
A/S weapons: 1 Squid triple-barrelled DC mortar
Main engines: 8 ASR 1 diesels in three engine rooms; 2 shafts (each with 4 engines); 14 400 bhp
Speed, knots: 24
Oil fuel, tons: 230
Range, miles: 2 300 at full power; 7 500 at 16 knots
Complement: 237 (14 officers, 223 ratings)

Ordered by the Royal Navy 28 June 1951. All welded. Transferred to Bangladesh at Royal Albert Dock, London 10 December 1976 for work-up and passage.

Radar: Long range surveillance: One Type 965 with double AKE 2 array.
Combined warning: One Type 993.
Height finder: One Type 278M.
Warning and air direction: One Type 986.
Fire control: Mk 6M director with Type 275.
Navigation: One Type 978.

Sonar: Types 174 and 164B.

UMAR FAROOQ *1977, Michael D. J. Lennon*

1 Ex-BRITISH "LEOPARD" CLASS (TYPE 41)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ALI HAIDER (ex-HMS *Jaguar*)	F 17	Wm. Denny & Bros Ltd, Dumbarton	2 Nov 1953	30 July 1957	12 Dec 1959

Displacement, tons: 2 300 standard; 2 520 full load
Dimensions, feet (metres): 339·8 × 40 × 16 (screws) *(103·6 × 12·2 × 4·9)*
Guns: 4—4·5 in *(115 mm)*/45 (twin Mk 6); 1—40 mm/60 (single Mk 9)
Main engines: 8 ASR 1 diesels in three engine rooms; 14 400 bhp; 2 shafts (each with 4 engines)
Speed, knots: 24
Oil fuel, tons: 220
Range, miles: 2 300 at full power; 7 500 at 16 knots
Complement: 235 (15 officers, 220 ratings)

Designed primarily for anti-aircraft protection. All welded. Ordered in 1951. Fitted with stabilisers. Transferred 16 July 1978. Cost £2 million on transfer. Cost new £3·7 million.

Electronics: ECM and D/F.

Engineering: Fitted with cp propellers, 12 ft diameter 200 rpm. The fuel tanks have a compensating system.

ALI HAIDER *10/1978, Michael D. J. Lennon*

Radar: Air search: One Type 965 with single AKE 1 array and IFF.
Combined warning: Type 993.
Fire control: Mk 6 M I-band. Type 275.
Navigation: One Type 975.

Reconstruction: Refitted in 1966-67 with new mainmast. Refitted at Vosper Thornycroft August-October 1978.

Transfer: Another ship of this class, *Panther*, was transferred to India while building and renamed *Brahmaputra*.

LIGHT FORCES

2 Ex-YUGOSLAV "KRALJEVICA" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
KARNAPHULI (ex-*PBR 502*)	P 301	Yugoslavia	1956
TISTA (ex-*PBR 505*)	P 302	Yugoslavia	1956

Displacement, tons: 180 standard; 202 full load
Dimensions, feet (metres): 134·5 × 20·7 × 5·5 *(41 × 6·3 × 1·7)*
Guns: 2—128 mm rocket launcher; 2—40/60 mm; 2—20 mm
Main engines: MAN W8V 30/38 diesels; 2 shafts; 3 300 bhp = 18 knots
Range, miles: 500 at 12 knots
Complement: 44 (4 officers, 40 ratings)

Transferred and commissioned 6 June 1975.

Radar: Decca 45.

Sonar: QCU 2.

TISTA *1976, A. G. Burgoyne*

4 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

SHAHEED DAULAT P 401
SHAHEED FARID P 402
SHAHEED MOHIBULLAH P 403
SHAHEED AKHTARUDDIN P 404

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm; 4—25 mm
A/S weapons: 8 DCs
Mines: 10 can be carried
Main engines: 4 diesels; 4 800 hp = 30 knots
Complement: 25

Transferred June-July 1980.

2 Ex-INDIAN "AKSHAY" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PADMA (ex-*INS Akshay*)	P 201	Hooghly D & E Co, Calcutta	1962
SURMA (ex-*INS Ajay*)	P 202	Hooghly D & E Co, Calcutta	1962

Displacement, tons: 120 standard; 150 full load
Dimensions, feet (metres): 117·2 × 20 × 5·5 *(35·7 × 6·1 × 1·7)*
Guns: 1—40/60 mm; 2—20 mm
Main engines: 2 Paxman diesels; 1 100 bhp; 2 shafts = 18 knots
Oil fuel, tons: 23
Complement: 35 (3 officers, 32 ratings)

Generally similar to the Royal Navy's "Ford" class. Transferred and commissioned 12 April 1973 and 26 July 1974 respectively.

SURMA *1977, Bangladesh Navy*

1 "RIVER CLASS" (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BISHKALI (ex-PNS *Jessore*)	—	Brooke Marine Ltd	20 May 1965

Displacement, tons: 115 standard; 143 full load
Dimensions, feet (metres): 107 × 20 × 5 *(32·6 × 6·1 × 1·5)*
Guns: 2—40 mm/70 Bofors
Main engines: 2 MTU 12V 538 diesels; 3 400 bhp = 24 knots
Complement: 30

PNS *Jessore*, which was sunk during the 1971 war, was salvaged and extensively repaired at Khulna Shipyard and re-commissioned as *Bishkali* on 23 November 1978.

BISHKALI *1980, Bangladesh Navy*

5 "PABNA" CLASS (RIVERINE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PABNA	P 101	DEW Narayangonj, Dacca	12 June 1972
NOAKHALI	P 102	DEW Narayangonj, Dacca	8 July 1972
PATUAKHALI	P 103	DEW Narayangonj, Dacca	7 Nov 1974
BOGRA	P 104	DEW Narayangonj, Dacca	15 July 1977
RANGAMATI	P 105	DEW Narayangonj, Dacca	11 Feb 1977

Displacement, tons: 69·5
Dimensions, feet (metres): 75 × 20 × 3·5 *(22·9 × 6·1 × 1·1)*
Gun: 1—40/60 Bofors
Main engine: Cummins diesel = 10·8 knots
Range, miles: 700
Complement: 33 (3 officers, 30 ratings)

The first indigenous naval craft built in Bangladesh. No further plans for any more craft of this class.

Radar: Decca Navigational

PATUAKHALI *1975, Bangladesh Navy*

AUXILIARIES

SHAHEED RUHUL AMIN (ex-*MV Anticosti*)

Displacement, tons: 710 full load
Dimensions, feet (metres): 155·8 × 36·5 × 10 *(47·5 × 11·1 × 3·1)*
Gun: 1—40/60 mm Bofors
Main engine: Caterpillar diesel; 1 shaft = 11·5 knots
Range, miles: 4 000
Complement: 80 (8 officers, 72 ratings)

Built by Atlantic Shipbuilding Co, Montreal. Laid down 1956, completed March 1957. Sold to India as MV *Anticosti*.
After use in relief work was handed over to BN in 1972, modified at Khulna and commissioned 10 December 1974 as a training ship.

SHAHEED RUHUL AMIN *1976, Bangladesh Navy*

SHAHAYAK

Re-engined and modernised at Khulna Shipyard and re-commissioned as BNS *Shahayak* in 1978 to act as repair vessel.

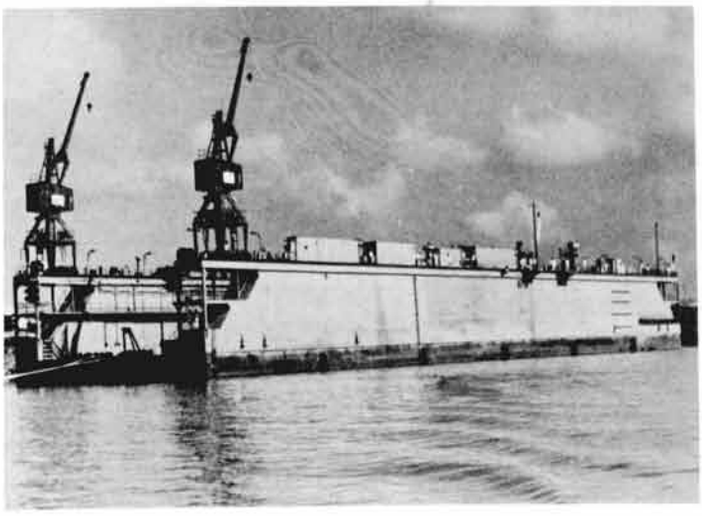
SHAHAYAK *1980, Bangladesh Navy*

FLOATING DOCK

SUNDARBAN

Capacity: 4 000 tons

Acquired from Brodogradiliste Joso Lozovina-Mosor, Trogir, Yugoslavia in 1980.



SUNDARBAN *1980, Bangladesh Navy*

BARBADOS

Personnel

(a) 1981: 61 (4 officers, 57 other ranks)
(b) Voluntary service

Coast Guard

This was formed early in 1973. In 1979 it became the naval arm of the Barbados Defence Forces. New base at Bridgetown due for completion end 1981. Plans to obtain a small fast-reaction craft for inshore work.

Base

Bridgetown *(Fort Willoughby)*

Prefix to Ships' Names

HMBS (To replace BCGS in near future)

Mercantile Marine

Lloyd's Register of Shipping:
37 vessels of 5 257 tons gross

1 37·5 METRE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
TRIDENT	P 01	Brooke Marine Ltd	Nov 1981

Displacement, tonnes: 155·5
Dimensions, feet (metres): 123 × 22·6 × 5·6 *(37·5 × 6·9 × 1·7)*
Guns: 1—40 mm; 1—20 mm
Main engines: 2 Paxman Valenta 12 RP200 diesels; 6 000 bhp; 2 shafts = 29 knots
Complement: 27

Radar: Decca TM 1226C

1 "GUARDIAN I" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
GEORGE FERGUSON	CG 601	Halmatic/Aquarius UK	Dec 1974

Displacement, tons: 30
Dimensions, feet (metres): 65·6 × 17·4 × 4·3 *(20 × 5·3 × 1·3)*
Guns: 2—0·76 mm MGs (provision for—not fitted)
Main engines: 2 General Motors 12V 71 TI diesels; 1 300 hp = 24 knots
Range, miles: 560 at 18 knots
Complement: 10

GRP hull. Air-conditioned and designed for Coast Guard/SAR duties. Launched 16 October 1974 for delivery in December.

3 "GUARDIAN II" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
COMMANDER MARSHALL	CG 402	Halmatic/Aquarius UK	Dec 1973
J. T. C. RAMSEY	CG 404	Halmatic/Aquarius UK	Nov 1974
T. T. LEWIS	CG 403	Halmatic/Aquarius UK	Feb 1974

Displacement, tons: 11
Dimensions, feet (metres): 41 × 12·1 × 3·3 *(12·5 × 3·7 × 1)*
Gun: 1—0·76 mm MG (provision for—not fitted)
Main engines: 2 Caterpillar diesels; 580 hp = 24 knots
Complement: 4

GRP Hulls. Designed for coastal patrol/SAR duties. CG 402 and 403 may be disposed of in near future.

2 75 ft (COASTAL PATROL CRAFT)

ENTERPRISE P 02 **EXCELLENCE** P 03

75 ft *(22·8 m)* shrimp-boats being converted for patrol duties by Swan Hunter (Trinidad). Due for completion 1981.

BELGIUM

Ministerial

Minister of Defence:
Frank Swaelen

Headquarters' Appointment

Chief of Naval Staff:
Rear-Admiral A. J. P. Schlim

Diplomatic Representation

Naval, Military and Air Attaché in Bonn:
Colonel L. Van Zwynsvoorde (Army)
Naval, Military and Air Attaché in London:
Colonel D. Gysemans (Army)
Naval, Military and Air Attaché in Paris:
Colonel J. A. L. Joseph (Air Force)
Naval, Military and Air Attaché in Washington:
Major General B. E. M. Troquet (Army)

Personnel

(a) 1981: 4 721 (1 350 national service)
(b) 10 months' national service

Note: 70 per cent of junior ratings are regular.

General

The Belgian Navy has now moved its interests further to sea with its new frigates but the replacement programme of MCMVs listed below will probably absorb the majority of its new construction budget for several years to come.

Strength of the Fleet

Type	*Active*	*Building*
Frigates	4	—
Minehunters (Ocean)	7	—
Minehunters (Coastal)	2	10 (5)
Minesweepers (Coastal)	—*	—
Minesweepers (Inshore)	14	—
Support Ships	2	—
River Patrol Boats	8	—
Research Ships	2	—
Auxiliary and Service Craft	13	—

* 4 MSC in reserve at Zeebrugge

Naval Aviation

3 Alouette III helicopters

Bases

Ostend: 1 MHC Squadron, 1 MSI Squadron.
Kallo: River patrol boats, 1 MSI Squadron, reserve MSIs.
Zeebrugge: Frigates, command and support ships. 1 MSO Squadron (New Main Base started in 1966 for completion in 1985).
Koksijde: Naval aviation.
Antwerp.

New Construction

One hydrographic ship to be built.

DELETIONS

1976 *Knokke* (MSC)
1979 *O/Lt Valcke* (Tug) (Replaced by same name)

Mercantile Marine

Lloyd's Register of Shipping:
290 vessels of 1 809 829 tons gross

PENNANT LIST

Frigates

F 910	Wielingen
F 911	Westdiep
F 912	Wandelaar
F 913	Westhinder

Mine Warfare Forces

M 471	Hasselt
M 472	Kortrijk
M 473	Lokeren
M 474	Turnhout
M 475	Tongeren
M 476	Merksem
M 477	Oudenaarde
M 478	Herstal
M 479	Huy
M 480	Seraing
M 482	Vise
M 483	Ougrée
M 484	Dinant
M 485	Andenne
M 902	Haverbeke
M 903	Dufour
M 904	De Brouwer
M 906	Breydel
M 907	Artevelde
M 908	Truffaut
M 909	Bovesse
M 928	Stavelot*
M 930	Rochefort*
M 932	Nieuwport*
M 933	Koksijde*
M 934	Verviers
M 935	Veurne

Support Ships and Auxiliaries

A 950	O/Lt Valcke
A 951	Hommel
A 952	Wesp
A 953	Bij
A 956	Krekel
A 958	Zenobe Gramme
A 959	Mier
A 960	Godetia
A 961	Zinnia
A 962	Mechelen
A 963	Spa
A 964	Heist
A 998	Ekster

River Patrol Boats

P 901	Leie
P 902	Liberation
P 903	Meuse
P 904	Sambre
P 905	Schelde
P 906	Semois
P 907	Rupel (V7)
P 908	Ourthe (V8)

* Reserve

FRIGATES

4 "WIELINGEN" CLASS (E-71)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
WIELINGEN	F 910	Boelwerf, Temse	5 Mar 1974	30 Mar 1976	20 Jan 1978
WESTDIEP	F 911	Cockerill, Hoboken	2 Sep 1974	8 Dec 1975	20 Jan 1978
WANDELAAR	F 912	Boelwerf, Temse	28 Mar 1975	21 June 1977	27 Oct 1978
WESTHINDER	F 913	Cockerill, Hoboken	8 Dec 1975	28 Jan 1977	27 Oct 1978

Displacement, tons: 1 880 light; 2 283 full load
Dimensions, feet (metres): 349 × 40·3 × 18·4 *(106·4 × 12·3 × 5·6)*
Missiles: SAM: Sea Sparrow (1—8 cell launcher); SSM: Exocet (4 launchers)
Guns: 1—3·9 in *(100 mm)*/55 Mod 1968 3; provision for 1 CIWS
Torpedo launchers: 2 for L-5 torpedoes
A/S rocket launchers: 1—6-barrelled 375 mm Le Creuzot-Laire with Bofors rockets
Rocket launchers: 2—Super RBOC dual-purpose Chaff/flare launchers
Main engines: CODOG—1 Rolls-Royce Olympus TM38 gas turbine; 28 000 bhp; 2 Cockerill CO-240 V12 diesels; 6 000 bhp. Twin cp propellers
Speed, knots: 29 (15 on 1 diesel, 20 on 2 diesels)
Range, miles: 4 500 at 18 knots; 6 000 at 15 knots
Complement: 160 (15 officers; 145 men)

This compact, well-armed class of frigate is the first class fully designed by the Belgian Navy and built in Belgian yards. All fitted with hull-mounted sonar and fin stabilisers. Fully air-conditioned.
The programme was approved on 23 June 1971 and design studies completed July 1973. A firm order was placed in October 1973 and *Wielingen* and *Westdiep* were first delivered in December 1976 and returned to the yard for engine overhaul which was completed a year later.

CIWS: The Belgian Navy is awaiting a decision on which system the Netherlands are to use—a similar system will then probably be fitted on after deck-house.

Decoys: Two Super RBOC and ASW decoy Nixie.

Electrical: 440 volts; 4—500 kW diesel alternators.

Electronics: Fully integrated and automated weapons command and control system of HSA (SEWACO 4). Radar search receiver—ELCOS I.

Fire control: One Panda optical director by CSEE.

Missiles: Sea Sparrow RIM 7H-2. Exocet MM 38.

WANDELAAR *7/1980, John G. Callis*

WIELINGEN *7/1980, Michael D. J. Lennon*

Radar: Air/surface surveillance and tracking: HSA WM-25.
Air/surface surveillance: HSA DA-05.
Navigation: Raytheon TM 1645/9X.
IFF: Mk 10A SIF; UPX-25.

Sonar: SQS 505A (Westinghouse).

MINE WARFARE FORCES

0 + 10 (+ 5) TRIPARTITE MINEHUNTERS/SWEEPERS

Name	No.	Builders	Laid down	Launched	Commissioned
—	—	Polyship	1981-84	—	1982-86

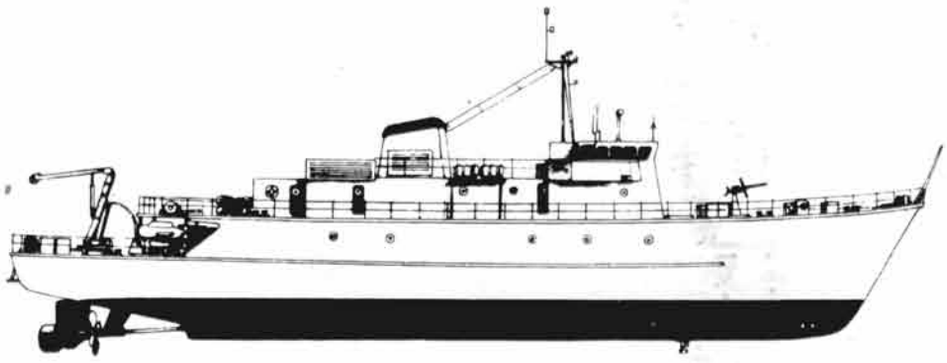
Displacement, tons: 510
Dimensions, feet (metres): 154·5 pp × 29·2 × 8·2 *(47·1 × 8·9 × 2·6)*
Gun: 1—20 mm
Minehunting: 2 PAP 104 systems (39 charges)
Minesweeping: Mechanical sweep gear (medium depth)
Main engine: 1 Werkspoor diesel: 2 280 hp = 15 knots; single axial propeller
Auxiliary propulsion: 2 motors; 166 kW = 7 knots
Range, miles: 3 000 at 12 knots
Endurance: 15 days
Complement: 48 (6 officers, 42 ratings) max

This design, developed in co-operation with the navies of France and the Netherlands, is being built in all three countries. Belgium is building ten with an option on a further five. The hull is of GRP and is fitted with active tank stabilisation, full NBC protection and air-conditioning. Has automatic pilot and buoy tracking. Carry six divers when minehunting.

Radar: Navigational set

Sonar: One DUBM 21A

Tasks: A 5 ton container can be carried, stored for varying tasks—HQ support, research, patrol, extended diving, drone control. The ship's company varies from 29-48 depending on the assigned task.



Tripartite minehunter

7 Ex-US "AGGRESSIVE" CLASS (MINEHUNTERS)

Name	No.	Builders	Laid down	Launched	Commissioned
J. E. **VAN HAVERBEKE** (ex-MSO 522)	M 902	Peterson Builders Inc, Sturgeon Bay, Wisc.	2 Mar 1959	25 Oct 1959	7 Nov 1960
A. F. DUFOUR (ex-*Lagen* M 950, ex-MSO 498, ex-AM 498)	M 903	Bellingham Shipyard Inc, Wash.	11 Feb 1954	13 Aug 1954	27 Sep 1955
DE BROUWER (ex-*Namsen*, M 951, ex-MSO 499, ex-AM 499)	M 904	Bellingham Shipyard Inc, Wash.	25 Apr 1954	15 Oct 1954	1 Nov 1955
BREYDEL (ex-MSO 504, ex-AM 504)	M 906	Tacoma Boatbuilding Co, Tacoma, Wash.	25 Nov 1954	25 Mar 1955	24 Jan 1956
ARTEVELDE (ex-MSO 503, ex-AM 503)	M 907	Tacoma Boatbuilding Co, Tacoma, Wash.	15 Oct 1953	19 June 1954	15 Dec 1955
G. TRUFFAUT (ex-MSO 515, ex-AM 515)	M 908	Tampa Shipbuilding Co, Inc, Tampa, Fla.	1 Feb 1955	1 Nov 1955	21 Sep 1956
F. BOVESSE (ex-MSO 516, ex-AM 516)	M 909	Tampa Shipbuilding Co, Inc. Tampa, Fla.	1 Apr 1954	8 Feb 1956	21 Dec 1956

Displacement, tons: 720 standard; 780 full load
Dimensions, feet (metres): 172·5 × 35 × 11 *(52·6 × 10·7 × 3·4)*
Gun: 1—40 mm (only *Artevelde*)
Main engines: 2 General Motors diesels; 2 shafts; 1 600 bhp
Speed, knots: 14
Oil fuel, tons: 50
Range, miles: 2 400 at 12 knots; 3 000 at 10 knots
Complement: 72 (5 officers, 67 men)

Wooden hulls and non-magnetic structure. Capable of sweeping mines of all types. Diesels of non-magnetic stainless steel alloy. Lips cp propellers.

Dufour and *De Brouwer* originally served in Royal Norwegian Navy (1955-66). *Artevelde* converted to Diving Vessel in 1972 but retains minehunting capability. In 1974 fitted with Siebe Gorman recompression chamber.

Sonar: SQQ 14 (GE) (except *Artevelde*).

Transfer dates: M902 9 Dec 1960, M903 14 Apr 1966, M904 14 Apr 1966, M906 15 Feb 1956, M907 16 Dec 1955, M908 12 Oct 1956, M909 25 Jan 1957.

F. BOVESSE *1/1980, Michael D. J. Lennon*

6 US "ADJUTANT" CLASS (ex-AMS) (MINESWEEPERS/HUNTERS—COASTAL)

Name	No.	Builders	Commissioned
***STAVELOT**	M 928	Boelwerf, Temse	1 July 1955
***ROCHEFORT**	M 930	Beliard, Ostend	28 Nov 1955
***NIEUWPOORT**	M 932	Beliard, Ostend	9 Jan 1956
***KOKSIJDE**	M 933	Beliard, Ostend	29 Nov 1955
VERVIERS (ex-*MSC 259*)	M 934	Boston, USA	4 June 1956
VEURNE (ex-*MSC 260*)	M 935	Boston, USA	23 Aug 1956

* Unmanned reserve.

Displacement, tons: 330 light; 390 full load
Dimensions, feet (metres): 144 × 27·9 × 8 *(43·9 × 8·5 × 2·4)*
Gun: 1—40 mm
Main engines: 2 General Motors diesels; 2 shafts (Voith-Schneider propellers in M 934 and 935); 880 bhp = 13·5 knots
Oil fuel, tons: 28
Range, miles: 3 000 at economical speed (10·5 knots)
Complement: 39

Wooden hulls and constructed throughout of materials with the lowest possible magnetic signature. M 934 and 935 were built the in USA, under MDAP, the others were built in Belgium with machinery and equipment from USA. M 934 (ex-*MSC 259*) transferred on 19 June 1956 and M 935 (ex-*MSC 260*) transferred on 7 September 1956. *Verviers* (in 1972) and *Veurne* (in 1969) converted to minehunters with Voith-Schneider propellers. *Veurne* used for survey work since October 1970.

Reclassification: *Mechelen*, A 926 (ex-M 926): research ship since 1964. *Spa* A 963 (ex-M 927): conversion to ammunition transport ship for guided missiles in 1978. *Heist* A 964 (ex-M 929): conversion to degaussing ship in 1978.
All this class originally classified AMS and reclassified MSC on 7 February 1955.

Sonar: Type 193 (Plessey) (minehunters).

Transfers: Three MSC to Norway—1966; five MSC to Greece—1969; eight MSC to Taiwan—1969.

VEURNE *1980, Leo van Ginderen*

14 "HERSTAL" CLASS (MINESWEEPERS—INSHORE)

Name	No.	Builders	Commissioned
HASSELT	M 471	Mercantile Marine Yard, Kruibeke	24 Apr 1958
KORTRIJK	M 472	Mercantile Marine Yard, Kruibeke	13 June 1958
LOKEREN	M 473	Mercantile Marine Yard, Kruibeke	8 Aug 1958
TURNHOUT	M 474	Mercantile Marine Yard, Kruibeke	29 Sep 1958
TONGEREN	M 475	Mercantile Marine Yard, Kruibeke	9 Dec 1958
MERKSEM	M 476	Mercantile Marine Yard, Kruibeke	6 Feb 1959
OUDENAARDE	M 477	Mercantile Marine Yard, Kruibeke	25 Apr 1959
HERSTAL	M 478 (ex-MSI 90)	Mercantile Marine Yard, Kruibeke	14 Oct 1957
HUY	M 479 (ex-MSI 91)	Mercantile Marine Yard, Kruibeke	24 Mar 1958
SERAING	M 480 (ex-MSI 92)	Mercantile Marine Yard, Kruibeke	3 June 1958
VISE	M 482 (ex-MSI 94)	Mercantile Marine Yard, Kruibeke	11 Sep 1958
OUGREE	M 483 (ex-MSI 95)	Mercantile Marine Yard, Kruibeke	10 Nov 1958
DINANT	M 484 (ex-MSI 96)	Mercantile Marine Yard, Kruibeke	14 Jan 1959
ANDENNE	M 485 (ex-MSI 97)	Mercantile Marine Yard, Kruibeke	20 Apr 1959

Displacement, tons: 160 light; 190 full load
Dimensions, feet (metres): 113·2 × 22·3 × 6 *(34·5 × 6·8 × 1·8)*
Guns: 2—5 (twin)
Main engines: 2 diesels; 2 shafts; 1 260 bhp = 15 knots
Oil fuel, tons: 18
Range, miles: 2 300 at 10 knots
Complement: 17

MERKSEM *12/1980, Leo van Ginderen*

Modified AMI "100-foot" class. Originally a class of sixteen.
The first group of eight (M 470 to 477) was financed under the Belgian Navy Estimates, the remaining eight (M 478 to 485) being a US "off-shore" order.
Herstal transferred to surveying duties in 1970. This class is likely to remain operational until 1988 at least.

Appearance: *Kortrijk, Hasselt* and *Herstal* have had the Double-L reel replaced by a deck-house and carry an inflatable dinghy.

Transfers: Two MSI to South Korea—1970.

SUPPORT SHIPS

Name	No.	Builders	Commissioned
ZINNIA	A 961	Cockerill, Hoboken	22 Sep 1967

Displacement, tons: 1 705 light; 2 685 full load
Dimensions, feet (metres): 326·4 × 49·9 × 11·8 *(99·5 × 15·2 × 3·6)*
Guns: 3—40 mm (single)
Aircraft: 1 helicopter
Main engines: 2 Cockerill V 12 RT 240 CO diesels; 5 000 bhp; 1 shaft
Speed, knots: 20
Oil fuel, tons: 500
Range, miles: 14 000 at 12·5 knots
Complement: 125

Laid down 8 November 1966, launched on 6 May 1967. Cp propeller. Design includes a platform and a retractable hangar for one light liaison-helicopter normally carried on board. Rated as Command and Logistic Support Ship.

ZINNIA *7/1980, Michael D. J. Lennon*

Name	No.	Builders	Commissioned
GODETIA	A 960	Boelwerf, Temse	23 May 1966

Displacement, tons: 1 700 light; 2 500 full load
Dimensions, feet (metres): 301 × 46 × 11·5 *(91·8 × 14 × 3·5)*
Guns: 2—40 mm (twin) (see *Refit* notes)
Main engines: 4 ACEC—MAN diesels; 2 shafts; 5 400 bhp = 19 knots
Oil fuel, tons: 294
Range, miles: 8 700 at 12·5 knots
Complement: 100 plus 35 spare billets

Laid down 15 February 1965 and launched 7 December 1965. Cp propellers. Provided with a platform which can take a light liaison-helicopter. Rated as Command and Logistic Support Ship.

Refits: Refitted and re-armed November 1968 to July 1969. Refit 1979-80 including construction of helicopter hangar, replacement of cranes, two midships sponsons for light guns.
Mid-life conversion to be undertaken in 1981.

GODETIA *1979, Leo van Ginderen*

8 RIVER PATROL BOATS

Name	No.	Builders	Commissioned
LEIE	P 901	Hitzler, Regensburg	16 Sep 1953
LIBERATION	P 902	Hitzler, Regensburg	4 Aug 1954
MEUSE	P 903	Hitzler, Regensburg	20 Aug 1953
SAMBRE	P 904	Hitzler, Regensburg	30 Sep 1953
SCHELDE	P 905	Hitzler, Regensburg	2 Sep 1953
SEMOIS	P 906	Hitzler, Regensburg	28 Oct 1953
RUPEL (ex-*Tresignies* B 30 1964-74)	P 907/V7	Hitzler, Regensburg	24 Nov 1954
OURTHE (ex-*L39* 1964-74)	P 908/V8	Hitzler, Regensburg	27 Oct 1954

Displacement, tons: 25 light; 27·5 full load
Dimensions, feet (metres): 82 × 12·5 × 3 *(25 × 3·8 × 0·9)*
Liberation 85·5 × 13·1 × 3·2 *(26 × 4 × 1)*
Guns: 2—13 mm MGs
Main engines: 2 diesels; 2 shafts; 440 bhp = 19 knots
Complement: 7

Rupel and *Ourthe* were loaned to the Marine Cadets, Belgian Navy from 1964-74 at Brussels and Liège respectively but are now operating with the navy again although loaned to the Marine Cadets during the summer using V7, V8 pendant numbers. *Semois* has been used as a diving vessel since 1965.

LIBERATION *10/1979, Leo van Ginderen*

AUXILIARIES

Name	No.	Builders	Commissioned
SPA	A 963 (ex-M 927 1953-78)	Boel and Zonen, Temse	10 Mar 1955
HEIST	A 964 (ex-M 929 1954-78)	Boel and Zonen, Temse	4 Apr 1956

Ex-MSCs (details under "Adjutant" class in Mine Warfare section) converted in 1978 to Ammunition Transport and Degaussing Ship respectively. Both named in 1958—previously known by their M pennant numbers.

SPA *8/1979, Michael D. J. Lennon*

RESEARCH SHIPS

Name	*No.*	*Builders*	*Commissioned*
ZENOBE GRAMME	A 958	Boel and Zonen, Temse	1962

Displacement, tons: 149
Dimensions, feet (metres): 92 × 22·5 × 7 *(28 × 6·8 × 2·1)*
Main engine: 1 MWM diesel; 1 shaft; 200 bhp = 10 knots
Complement: 14

Auxiliary sail ketch. Laid down 7 October 1960 and launched 23 October 1961. Designed for scientific research.

Name	*No.*	*Builders*	*Commissioned*
MECHELEN	A 962 (ex-M 926 1954-66)	Boel and Zonen, Temse	7 Dec 1954

Former coastal minesweeper of "Adjutant" class (see Mine Warfare section). Used as a research ship since 1963 being renumbered as A 962 in 1966. First named in 1958. Carries no armament.

MECHELEN *3/1980, L. and L. van Ginderen*

TUGS

2 COASTAL TUGS

O/LT. VALCKE (ex-*Steenbank*, ex-*Astrolog*) A 950
EKSTER (ex-*Schouwenbank*, ex-*Astronoom*) A 998

Displacement, tons: 183
Dimensions, feet (metres): 99·7 × 24·9 × 11·8 *(30·4 × 7·6 × 3·6)*
Main engines: Diesel-electric; 2 Deutz diesels; 1 240 hp = 12 knots
Complement: 12

Originally Netherlands civilian tugs built by H. H. Bodewes, Millingen in 1960. Bought by Belgian Navy in April 1980.

O/LT. VALCKE *1980, Michael D. J. Lennon*

BIJ A 953 **KREKEL** A 956

Harbour tugs with fire-fighting facilities. Of 71 tons and twin shafts; 400 hp with Voith-Schneider propellers. *Bij* built by Akerboom, Lisse 1959, *Krekel* by Ch. Navals de Rupelmonde 1961.

BIJ *12/1978, Leo van Ginderen*

HOMMEL A 951 **WESP** A 952

Harbour tugs of 22 tons, 300 bhp diesels with Voith-Schneider propellers. Both built by Clausen, Remagen-Oberwinter in 1952-53.

WESP *7/1980, Michael D. J. Lennon*

MIER A 959

Harbour tug of 17·5 tons with 90 bhp diesel. Built Liège 1962.

MISCELLANEOUS

SPIN

Harbour launch of 32 tons built in Netherlands 1958.

FN 4, 5 and **6**

Tanker barges of 300 tons built by Ch. Naval J. and F. Plaquet, Peronnes-les-Antoing in 1957.

ZM 4

Diving Cutter of 8 tons built by Chantier Richard Panesi, Ostend. Completed 5 April 1954.

BELIZE

Personnel

(a) 50 approximately
(b) Voluntary service

Mercantile Marine

Lloyd's Register of Shipping:
3 vessels of 620 tons gross

Base

Belize

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
BELIZE	PBM 01	Brooke Marine, Lowestoft	1972
BELMOPAN	PBM 02	Brooke Marine, Lowestoft	1972

Displacement, tons: 15
Dimensions, feet (metres): 40 × 12 × 2 *(12·2 × 3·6 × 0·6)*
Guns: 3 MGs
Main engines: 2 diesels; 370 hp = 22 knots

BENIN

General

In 1978 a decision was taken to found a naval force. Although the coastline of Benin is no more than 75 miles long the type of craft provided by the USSR which, in some cases, can cover the whole coast in a little over two hours, appears to be out of phase with the requirements of a small and somewhat backward country.

Base

Cotonou

Personnel

? 200

Mercantile Marine
Lloyd's Register of Shipping:
13 vessels of 4 557 tons gross

LIGHT FORCES

2 Ex-SOVIET "OSA I" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 165 standard; 200 full load
Dimensions, feet (metres): 128·7 × 25·1 × 5·9 *(39·3 × 7·7 × 1·8)*
Guns: 4—30 mm (twins)
Main engines: 3 M503 diesels; 12 000 hp = 36 knots
Range, miles: 800 at 25 knots
Complement: ?30

Delivered 1979 with missiles removed.

2 Ex-SOVIET "P4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 22 standard; 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Gun: 1—14·5 mm
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 200 hp; 2 shafts = 50 knots
Range, miles: 400 at 13 knots
Complement: 12

Transferred 1979.

4 Ex-SOVIET "ZHUK" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 50 standard; 60 full load
Dimensions, feet (metres): 75 × 16 × 6 *(24·6 × 5·2 × 1·9)*
Guns: 2—14·5 mm (twin fwd); 1—12·7 mm (aft)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

Transferred: two 12 January 1979, one 30 January 1979 and one 15 September 1980.

BERMUDA

General

A small group operated by the Bermudan Police under the charge of Sergeant G. B. Ardis.

Royal Navy

The Royal Navy retains a base facility in Bermuda.

Base

Hamilton.

Mercantile Marine

Lloyd's Register of Shipping:
114 vessels of 1 723 682 tons gross

BLUE HERON

Delivered 22 May 1978 by Harris Boat, Newburyport, Massachusetts, USA. Of 7 tons, 36 ft *(10·9 m)* with two General Motors diesels = 260 shp. Complement 3.

HERON I **HERON III**

Delivered March 1977 and April 1978 by Mako Marine, Florida, USA. Of 22 ft *(6·7m)* and 1 ton with a 200 hp Evinrude outboard. Complement 2.

HERON II

Delivered 1971 by Correct Craft Marine, USA. Of 20 ft *(6 m)* and 1 ton with a 250 hp Chrysler outboard. Complement 2.

20 ft Police Launch *1979, Bermudan Police*

BOLIVIA

Headquarters' Appointment

Commander F.N.B.
Rear-Admiral Ramiro Terrazas Rodrigues

Personnel

(a) 1981: 4 000 officers and men (including marines)
(b) 12 months' selective military service

General

A small navy, Fuerza Naval Boliviana, used for patrolling Lake Titicaca and the Beni, Madre de Dios, Mamoré and Paraguay river systems. These rivers cover over 6 000 miles. Most of the training of officers and senior ratings is carried out in Argentina. The junior ratings are almost entirely converted soldiers. The upkeep of some of the craft is certainly below normal standards. There are currently four naval districts.

Bases

Guayaramerin
Puerto Busch
Riberalta
Tiquina
Trinidad

Prefix to Ships' Names

FNB

Mercantile Marine

Lloyd's Register of Shipping:
2 vessels of 15 130 tons gross

1 TRANSPORT

Name	*No.*	*Builder*	*Commissioned*
LIBERTADOR BOLIVAR	TM01	Fairfield, UK	1951 (see note)

Displacement, tons: 4 214 gross; 6 390 deadweight
Dimensions, feet (metres): 421·1 × 55 × 22·9 *(128·4 × 16·8 × 6·9)*
Main engine: 1 Fairfield-Droxford diesel; 4 600 hp = 16 knots

A gift from Venezuela to Bolivia in 1977. Commissioned 23 March 1978 with a naval crew. Used for commercial purposes from Rosario/Nueva Palinira (Bolivian free zones in Argentina and Uruguay).

RIVER/LAKE PATROL CRAFT

Name	*No.*	*Tonnage*	*Dimensions, feet (metres)*	*Notes*
ALMIRANTE GRAU	M 01	52	44·3 × 10·5 × 4·8 *(13·5 × 3·2 × 1·5)*	Training and Transport. Diesel.
NICOLAS SUAREZ	M 02	26·5	57·6 × 11·2 × 6·4 *(18 × 3·5 × 2)*	Built 1963. Iron hull. Diesel.
MARISCAL SANTA CRUZ	M 03	52	44·3 × 10·5 × 4·8 *(13·5 × 3·5 × 2)*	Training and Transport. Diesel.
PRESIDENTE BUSCH	M 04	52	60·8 × 11·2 × 4·2 *(19 × 3·5 × 1·3)*	Wooden hull. Diesel.
COMANDANTE ARANDIA	M 05	82	72·3 × 12·8 × 4·5 *(22·6 × 4 × 1·4)*	Iron hull. Diesel. Rebuilt 1970.
TOPATER	M 06	—	—	—
BRUNO RACUA	M 07	17	57·6 × 13·1 × 3·8 *(18 × 4·1 × 1·2)*	Wooden hull. Diesel.
CORONEL EDUARDO ABAROA	M 08	82	80 × 27·8 × 4·8 *(25 × 8·7 × 1·5)*	Built 1965.
PRESIDENTE KENNEDY	—	12	38·4 × 11·4 × 3·3 *(12 × 3·5 × 1)*	Wooden hull. Diesel. Ex-US PB Mk 1. Survivor of three transferred 1963.

YACUMA A-3-02, ITENEZ A-3-03, MADERA A-3-04, IBARE A-3-05, CHAPARE A-3-06, ICHILO A-3-07, MUCHULA A-3-08, TORIBIO A-3-09, LITORAL A-3-10, INDEPENDENCIA, MAYTA KAPAC, LADISLAO CABREA, MAPIRI, TAHUAMANU V-01 are all borne on the nominal list although details are not available.

In addition one river craft of 112 tons (built in Bolivia 1970), one of 55 tons (built in Bolivia in 1971-72), eight smaller river craft (built in Bolivia 1973-76), two ex-US PBR Mark II of 8·5 tons (transferred April 1974) and one Lake Patrol Boat of 12 tons are in service although details, names and pennant numbers are not available. Two hospital ships are employed on Lake Titicaca and Rio Mamoré, the former being *Julian Apaza*, a gift from the USA in 1972.

BRAZIL

Ministerial

Minister of the Navy:
Admiral Maximiano Eduardo Da Silva Fonseca

Headquarters' Appointments

Chief of Naval Staff:
Admiral Roberto Andersen Cavalcanti
Chief of Naval Operations:
Admiral Braga de Faria
Chief of Naval Materiel:
Admiral José Gerardo Albano Theophilo De Aratanha
Chief of Naval Personnel:
Admiral José Calvente Aranda
Commandant General Brazilian Marines:
Admiral Domingos de Mattos Cortes

Diplomatic Representation

Naval Attaché in Asunción (Marines):
Captain Humberto Barbosa Lima Martins
Naval Attaché in Bonn and the Hague:
Captain Heinrich Georg Schuler
Naval and Defence Attaché in Buenos Aires:
Captain José Ignacio Gomes Pereira
Naval Attaché in La Paz:
Captain Luiz Oscar Moss Goulart
Naval and Defence Attaché in Lima:
Captain Jose Macedo Guimarães
Naval and Air Attaché in Lisbon and Madrid:
Captain Arnaldo Leite Pereira
Naval and Army Attaché in London, Oslo and Stockholm:
Captain Antonio G. Dutra
Naval Attaché in Montevideo:
Captain Mauro Affonso Gomes Lages
Naval Attaché in Paris and Rome:
Captain Claus Dieter Eichler
Naval and Defence Attaché in Santiago:
Captain Ivaldo Carvalho dos Santos
Naval and Defence Attaché in Tokyo and Seoul:
Captain Gerez Teixeira Martins
Naval Attaché in Washington and Ottowa:
Rear Admiral Renato de Miranda Monteiro
Head of the Brazilian Naval Commission in Europe:
Rear Admiral Geraldo Sylvio Cravo Guimarães

General

With a coastline of 4 655 miles Brazil has a considerable problem even to patrol the more important areas in peacetime. The "Niteroi" class has brought a considerable addition to the present strength which includes an aircraft-carrier, twelve destroyers and five submarines of World War II construction and three "Oberon" class submarines. While the patrol and river forces are probably adequate a considerable programme of replacement is needed amongst the larger ships.

Personnel

(a)
1980: 45 500 (3 900 officers and 41 600 men)
1981: 45 800 (4 000 officers and 41 800 men)
Figures include 12 000 marines and also auxiliary corps

(b) 1 year's national service

Naval Bases

Rio de Janeiro (main base with 3 dry docks and 1 floating dock)
Aratu (Bahia) (major naval yard with 1 dry dock, 1 floating dock and synchro-lift).
Belém (naval base and repair yard with 1 dry dock)
Natal (small naval base and repair yard with 1 floating dock—being rebuilt as major base)
Ladario (river base of *Mato Grosso* flotilla)
Sao Pedro (naval air station)

Maritime Aviation

A Fleet Air Arm was formed on 26 January 1965.

Navy

4 Sikorsky SH-3D
2 Westland Whirlwind (UH-5)
12 Westland Wasp HAS-1 (UH-2)
17 Bell 206B Jetrangers
9 Westland Lynx WG 13 for "Niteroi" class
Note: 8 Aerospatiale Ecureuil AS 350 ordered in late 1979 for survey work

Air Force (Comando Costeira)

8 EMB-110/S-95 (SAR) (on order)
8 Grumman S-2E Trackers (ASW)
8 Grumman S-2A Trackers (Transport and Training)
3 Lockheed RC-130E Hercules (SAR/PR)
12 EMB-111 (LRMP)
6 EMB-110B (PR)
15 Neiva T25 Universal I (liaison)
4 Bell SH-1D (SAR helicopters)
2 Bell 47G (SAR helicopters)
6 Puma (SAR helicopters)
6 Aerospatiale AS 350 Ecureuil helicopters for survey work (ordered)

New Construction

Forty nine ships are planned including a carrier, submarines, missile cruisers, frigates and amphibious ships.

Marines (Corpo de Fuzileiros Navais)

12 000 officers and men.

Headquarters at Fort Sao José, Rio de Janeiro
Divisao Anfibia: 1 Command Battalion, 3 Infantry Battalions, 1 Artillery group, 1 Service Battalion
Comando de Reforca: 1 Battalion of special troops (anti-guerilla). Transport, engineer and medical units.

Divisao Anfibia and Comando de Reforca forms together the Forca de Fuzileiros da Esquadra stationed at Rio de Janeiro, other units called Grupamentos Regionais are stationed at or near naval installations in the rest of the country.

Amphibious vehicles: 34 DUKW and 20 EE-11 URUTU.
Artillery includes Brazilian R.115 bombardment rockets, 105 mm howitzers, armoured cars, APCs and 106 mm recoilless rifles.

Prefix to Ships' Names

These vary, indicating the type of ship e.g. N Ae L = Aircraft Carrier; CT = Destroyer.

Strength of the Fleet

Type	*Active*	*Building*
Submarines (Patrol)	8	—
Attack Carrier (medium)	1	—
Destroyers	12	—
Frigates	6	(1)
Patrol Ships	10	—
Landing Ships	2	—
Landing Craft	35	—
Monitor	1	—
River Patrol Ships	5	—
Large Patrol Craft	6	—
River Patrol Craft	10	—
Minesweepers (Coastal)	6	—
Survey Ships	8	—
Survey Launches	6	—
Light Tenders	5	—
S/M Rescue Ship	1	—
Repair and Support ships	2	—
Large Tanker	1	—
Small Tankers	2	—
Transports	15	—
Tugs—Ocean	3	—
Tugs—Harbour	10	—
Floating Docks	3	—
Auxiliaries	11	—

Mercantile Marine

Lloyd's Register of Shipping:
607 vessels of 4 533 663 tons gross

DELETIONS

Submarines

1978 *Rio de Janeiro* (ex-*Odax*)
Rio Grande do Sul (ex-*Grampus*)

Cruisers

1975 *Tamandaré* (sank on way to breakers Aug 1980) (ex-US "St Louis" class)

Destroyers

1974 *Acre, Araguaia, Araguari*—(auction July for scrap) (All Brazilian built 1949-51)
1978 *Para, Paraiba*

Frigates

1975 *Benevente, Bocaina* (auction Feb for scrap) (All ex-US "Cannon" class)

Mine Warfare Forces

1974 *Jutai, Juruena* (paid off in Aug)

Auxiliaries

1976 *Javari* and *Jurua*
1977 *Faroleiro Santana*
1978 *Antonio Joa, Getulio Lima, Pratico Juvecio, Faroleiro Wanderley, Wandenkolk, Raimundo Nonato, Etchbarne, Grumete, Itapura, Paulo Afonso, Tenente Fabio, Tenente Raul, San Francisco dos Santos, Ubirajara dos Santos, Operario Luis Leal*

PENNANT LIST

Submarines

S 10	Guanabara
S 12	Bahia
S 14	Ceara
S 15	Goiáz
S 16	Amazonas
S 20	Humaita
S 21	Tonelero
S 22	Riachuelo

Aircraft Carrier

A 11	Minas Gerais

Destroyers

D 25	Marcilio Dias
D 26	Mariz e. Barros
D 29	Parana
D 30	Pernambuco
D 31	Piaui
D 32	Santa Catarina
D 33	Maranhão
D 34	Mato Grosso
D 35	Sergipe
D 36	Alagoas
D 37	Rio Grande do Norte
D 38	Espirito Santo

Frigates

F 40	Niteroi
F 41	Defensora
F 42	Constituição
F 43	Liberal
F 44	Independencia
F 45	União

Amphibious Forces

G 26	Duque de Caxias
G 28	Garcia d'Avila
L 10	Guarapari
L 11	Tambau
L 12	Camboriu

Patrol Forces

P 20	Pedro Teixeira
P 21	Raposo Tavares
P 30	Roraima
P 31	Rondonia
P 32	Amapa
U 17	Parnaiba
V 15	Imperial Marinheiro
V 16	Iguatemi
V 17	Ipiranga
V 18	Forte De Coimbra
V 19	Caboclo
V 20	Angostura
V 21	Bahiana
V 22	Mearim
V 23	Purus
V 24	Solimoes

Light Forces

P 10	Piratini
P 11	Piraja
P 12	Pampeiro
P 13	Parati
P 14	Penedo
P 15	Poti

Mine Warfare Forces

M 15	Aratu
M 16	Anhatomirim
M 17	Atalaia
M 18	Aracatuba
M 19	Abrolhos
M 20	Albardão

Survey Vessels and Tenders

H 10	Almirante Saldanha
H 11	Paraibano
H 12	Rio Branco
H 13	Mestre João dos Santos
H 14	Nogueira da Gama
H 15	Itacurussa
H 16	Camocim
H 17	Caravelas
H 21	Sirius

Survey Vessels and Tenders

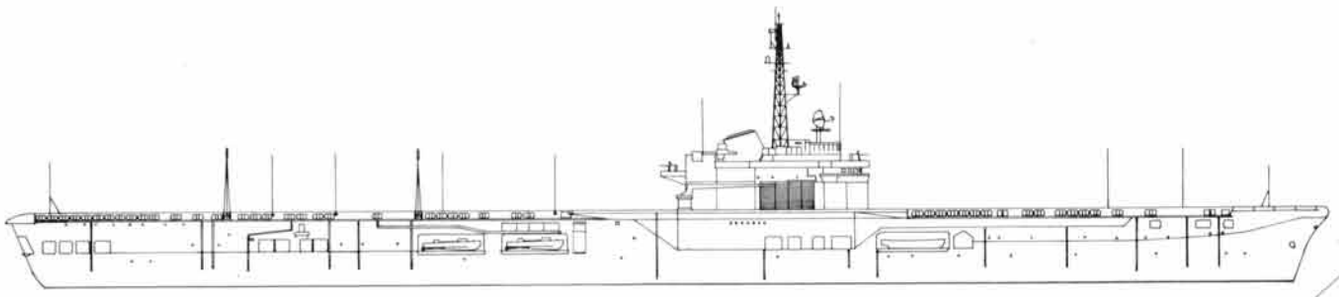
H 22	Canopus
H 24	Castelhanos
H 25	Faroleiro Nascimento
H 27	Faroleiro Areas
H 31	Argus
H 32	Orion
H 33	Taurus
H 34	Graça Aranha
H 41	Almirante Camara

Miscellaneous

G 15	Paraguassu
G 16	Barroso Pereira
G 17	Potengi
G 21	Ary Parreiras
G 22	Soares Dutra
G 24	Belmonte
G 25	Afonso Pena
G 26	Am. Jeronimo Gonçalves
G 27	Marajó
K 10	Gastao Moutinho
R 11	Martins de Oliveira
R 13	Almirante Brasil
R 14	Laurindo Pitta
R 21	Tritão
R 22	Tridente
R 23	Triunfo
R 27	A. Barbosa

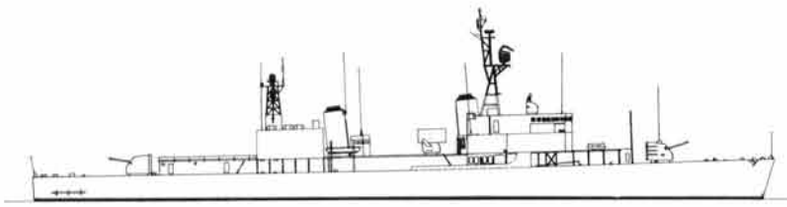
Miscellaneous

R 31	Audaz
R 32	Centauro
R 33	Guarani
R 34	Lamego
R 35	Passo da Patria
R 36	Voluntario
R 38	Dr. Gondim
R 40	Guairia
R 41	Iguaçu
R 44	Maria Quiteria
R 47	Sargento Borges
R 51	Argentina
R 54	Anchova
R 55	Arenque
R 56	Atum
R 57	Acara
R 58	Agulha
R 59	Aruana
U 20	Rio Doce
U 21	Rio das Contas
U 22	Rio Formoso
U 23	Rio Real
U 24	Rio Turvo
U 25	Rio Verde
U 26	Custódio de Mello
U 28	Bauru
U 40	Rio Pardo
U 41	Rio Negro
U 42	Rio Chui
U 43	Rio Oiapoque

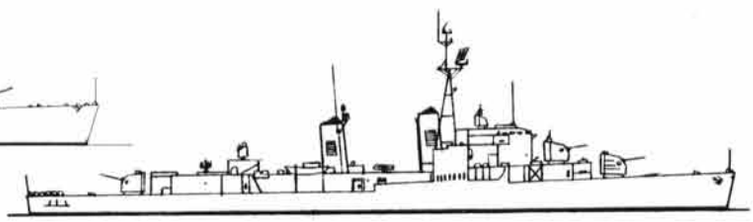


MINAS GERAIS

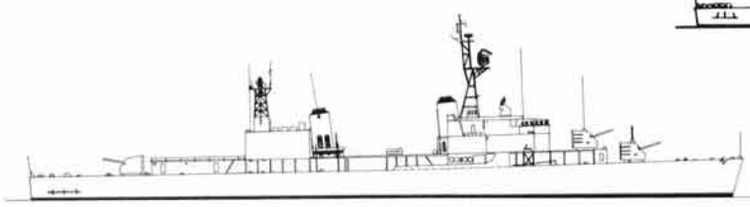
1980, Ian Sturton



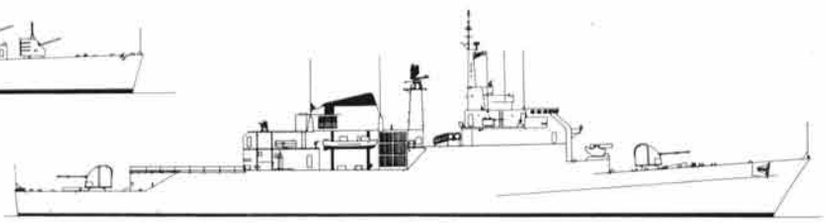
MARCILIO DIAS



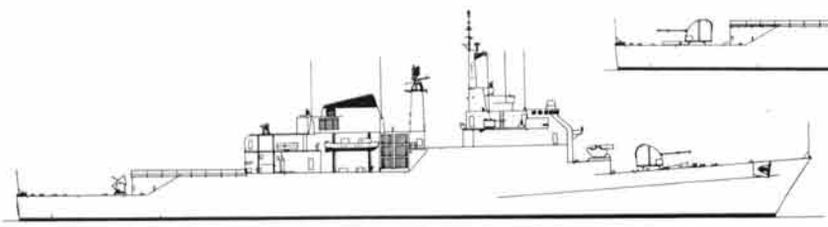
MATO GROSSO



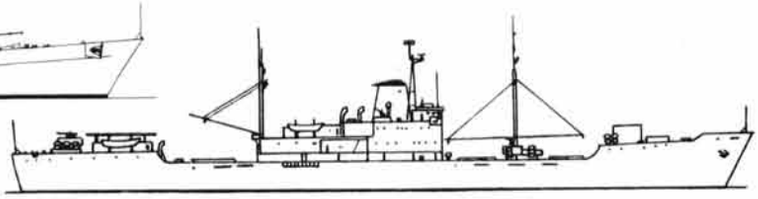
SERGIPE



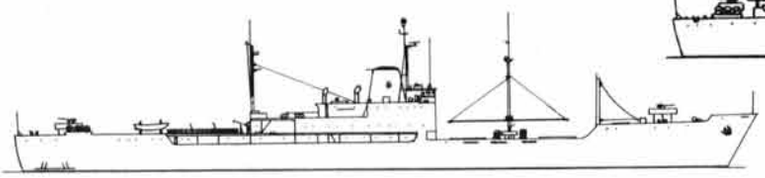
LIBERAL



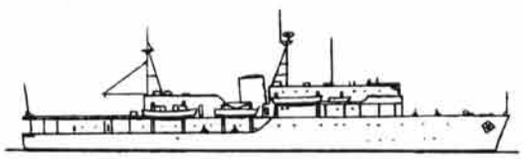
NITEROI



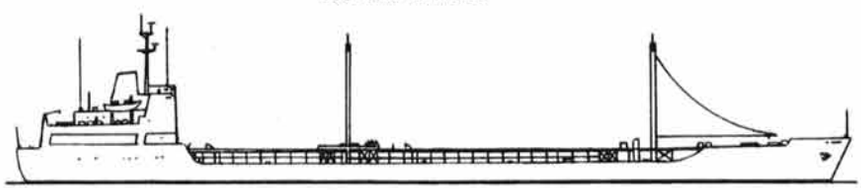
"BARROSO PEREIRA" Class



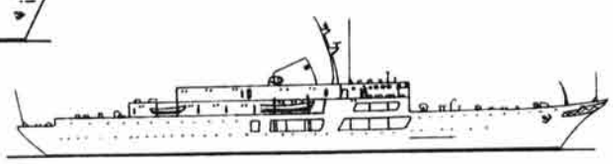
CUSTODIO DE MELLO



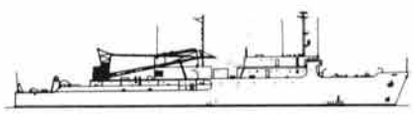
"SIRIUS" Class



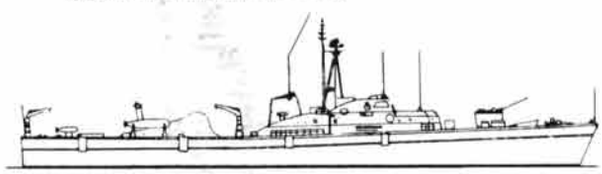
MARAJO



ALMIRANTE SALDANHA

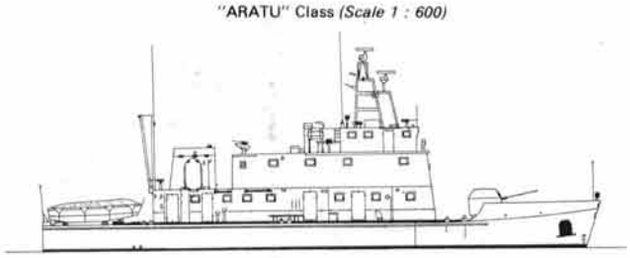


ALMIRANTE CAMARA *(Scale 1 : 600)*

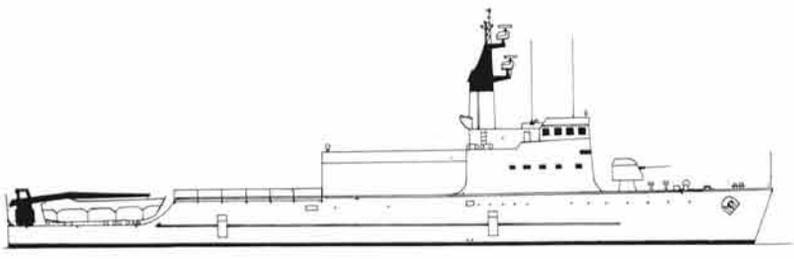


"ARATU" Class *(Scale 1 : 600)*

"ARGUS" Class *(Scale 1 : 600)*



RORAIMA *(Scale 1 : 600)*



PEDRO TEIXEIRA *(Scale 1 : 600)*

(Drawings by Peter Jones)

SUBMARINES

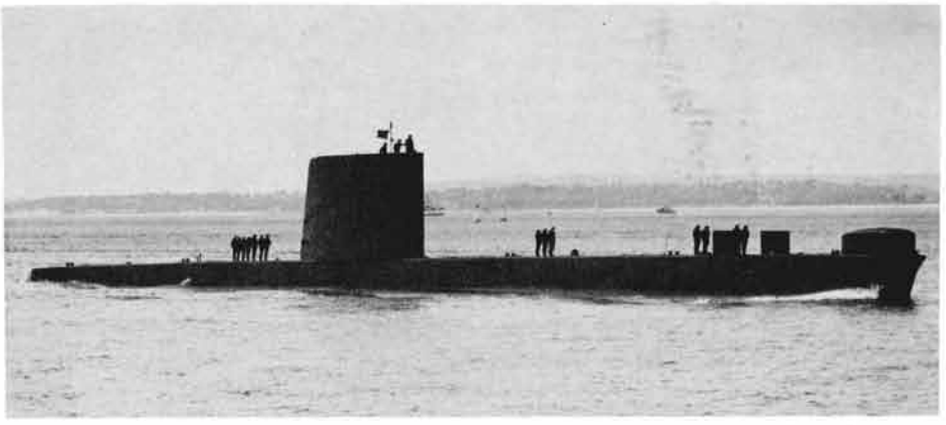
Note: The replacement of the ageing ex-US Navy submarines is a matter which must be decided by mid-1981. At present the choice is reported as lying between an Italian design (presumably similar to the "Nazario Sauro" class) and a West German Howaldstwerke design. The balance is currently reported as being in favour of the Italians. The size of any order may be influenced by current problems in the balance of payments.

3 BRITISH "OBERON" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
HUMAITA	S 20	Vickers, Barrow	3 Nov 1970	5 Oct 1971	18 June 1973
TONELERO	S 21	Vickers, Barrow	18 Nov 1971	22 Nov 1972	10 Dec 1977
RIACHUELO	S 22	Vickers, Barrow	26 May 1973	6 Sep 1975	12 Mar 1977

Displacement, tons: 1 610 standard; 2 030 surfaced; 2 410 dived
Dimensions, feet (metres): 295·2 × 26·5 × 18 *(90 × 8·1 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)* (6 bow and 2 stern)
Main machinery: 2 Admiralty Standard Range 1 16-cyl diesels; 3 680 bhp; 2 electric motors; 6 000 shp; 2 shafts
Speed, knots: 16 surfaced, 17 dived
Complement: 70 (6 officers and 64 men)

In 1969 it was announced that two submarines of the British "Oberon" class were ordered from Vickers, Barrow. The third boat was ordered in 1972. Completion of *Tonelero* was much delayed by a serious fire on board originating in the cabling. She spent a period in Chatham Dockyard, having been towed from Barrow, returning in January 1976. She sailed from UK 12 February 1978. It was this fire which resulted in re-cabling of all "Oberon" class under construction. While in Chatham the centre 60 ft was replaced. Diesels by Vickers Shipbuilding Group. Electric motors by AEI-English Electric. Sonar, modern navigational aids and provision for modern fire control system developed by Vickers.



RIACHUELO *1977, Michael D. J. Lennon*

2 Ex-US GUPPY III TYPE

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
GOIÁZ (ex-USS *Trumpetfish* SS 425)	S 15	Cramp S.B. Co	23 Aug 1943	13 May 1945	29 Jan 1946
AMAZONAS (ex-USS *Greenfish* SS 351)	S 16	Electric Boat Co	29 June 1944	21 Dec 1945	7 June 1946

Displacement, tons: 1 975 standard; 2 450 dived
Dimensions, feet (metres): 326·5 × 27 × 17 *(99·5 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in *(533 mm)*; 6 bow, 4 stern
Main machinery: 4 diesels; 6 400 hp; 2 electric motors; 5 400 hp; 2 shafts
Speed, knots: 20 surfaced; 15 dived
Complement: 85

Converted in 1960-62. *Goiáz* transferred by sale 15 October 1973 and *Amazonas* 19 December 1973.

Sonar: BQR 2 array, BQG 4 (PUFFS) fire control sonar (fins on casing).

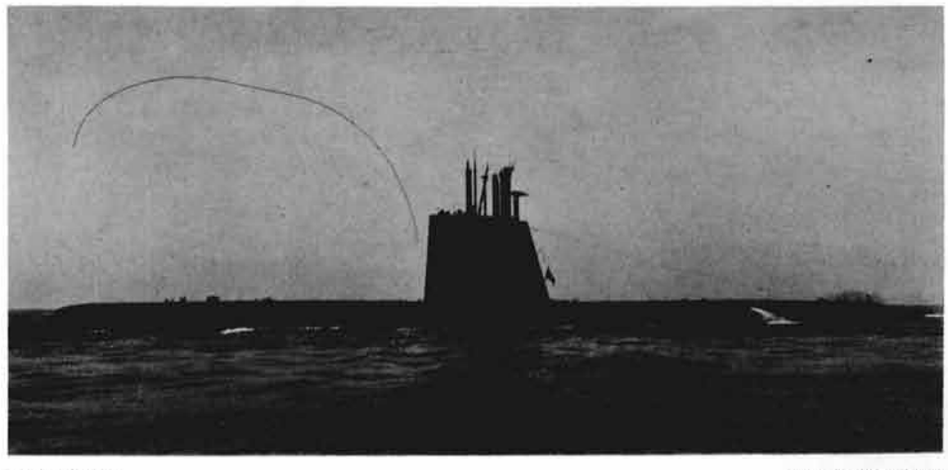
AMAZONAS *1977, Brazilian Navy*

3 Ex-US GUPPY II TYPE

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
GUANABARA (ex-USS *Dogfish* SS 350)	S 10	Electric Boat Co	22 June 1944	27 Oct 1945	29 Apr 1946
BAHIA (ex-USS *Sea Leopard* SS 483)	S 12	Portsmouth Navy Yard	7 Nov 1944	2 Mar 1945	11 June 1945
CEARÁ (ex-USS *Amberjack* SS 522)	S 14	Boston Navy Yard	8 Feb 1944	15 Dec 1944	4 Mar 1946

Displacement, tons: 1 870 standard; 2 420 dived
Dimensions, feet (metres): 307·5 × 27·2 × 18 *(93·7 × 8·3 × 5·5)*
Torpedo tubes: 10—21 in *(533 mm)* (6 bow, 4 stern)
Main machinery: 3 diesels, 4 800 shp; 2 motors; 5 400 shp; 2 shafts
Speed, knots: 18 surfaced; 15 dived
Range, miles: 12 000 at 10 knots (surfaced)
Complement: 82

Modernised under Guppy II programme 1948-50. Transferred 28 July 1972 *(Guanabara)*, 27 March 1973 *(Bahia)*, 17 October 1973 *(Ceara)*. All by sale.



GUPPY II TYPE *1977, Brazilian Navy*

AIRCRAFT CARRIER

1 Ex-BRITISH "COLOSSUS" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MINAS GERAIS (ex-HMS *Vengeance*)	A 11	Swan, Hunter & Wigham Richardson, Ltd, Wallsend on Tyne	16 Nov 1942	23 Feb 1944	15 Jan 1945

Displacement, tons: 15 890 standard; 17 500 normal; 19 890 full load (see *Displacement* note)
Dimensions, feet (metres): 695 × 80 × 24·5 *(211·8 × 24·4 × 7·5)*
Flight deck:
Length, feet (metres): 690 *(210·3)*
Width, feet (metres): 121 *(37·0)* oa as reconstructed
Height, feet (metres): 39 *(11·9)* above water line
Catapults: 1 steam
Aircraft: 20 aircraft including 8 S2E Trackers, 4 Sea Kings
Guns: 10—40 mm/60 (2 quad Mk2, 1 twin Mk 1), 2—47 mm (saluting)
Main engines: Parsons geared turbines; 2 shafts; 40 000 shp
Boilers: 4 Admiralty 3-drum type; Working pressure 400 psi *(28 kg/cm²)*; max superheat 700°F *(371°C)*
Speed, knots: 24; 25·3 on trials after reconstruction
Oil fuel, tons: 3 200
Range, miles: 12 000 at 14 knots; 6 200 at 23 knots
Complement: 1 000 (1 300 with air group)

MINAS GERAIS *1971, Brazilian Navy*

Served in the Royal Navy from 1945 onwards. Fitted out 1948-49 for experimental cruise to the Arctic. Lent to the RAN early in August 1953, returned to the Royal Navy in 1955. Purchased by the Brazilian Government on 14 December 1956. Reconstructed at Verolme Dock, Rotterdam from summer 1957 to December 1960. The conversion and overhaul included the installation of the angled deck, steam catapult, mirror-sight deck landing system, armament fire control and radar equipment. The ship was purchased for $9 million and the reconstruction cost $27 million. Commissioned in the Brazilian Navy at Rotterdam on 6 December 1960. Left Rotterdam for Rio de Janeiro 13 January 1961. Used primarily for anti-submarine aircraft and helicopters. Under refit 1976-80. A replacement carrier is being considered.

Displacement: Before reconstruction: 13 190 tons standard; 18 010 tons full load.

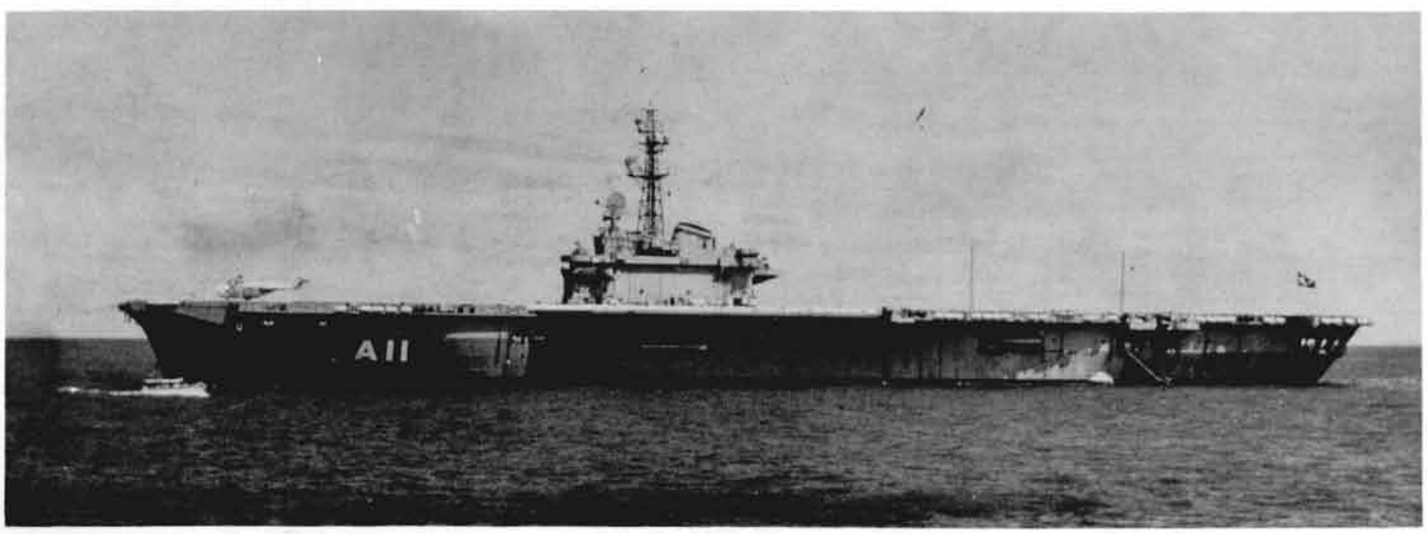
Engineering: The two units each have one set of turbines and two boilers installed side by side. Maximum speed at 220 rpm. Steam capacity was increased when the boilers were retubed during reconstruction in 1957-60.

Electrical: During reconstruction an alternating current system was installed with a total of 2 500 kW supplied by four turbo-generators and one diesel generator.

Hangar: Dimensions: length, 445 ft; width, 52 ft; clear depth, 17·5 ft. Aircraft lifts: 45 × 34 ft. During reconstruction in 1957-60 new lifts replaced the original units.

Operational: Single track catapult for launching, and arrester wires for recovering, 30 000 lb aircraft at 60 knots. Catapult accelerator gear port side forward.

Radar: Air surveillance: SPS 12.
Surface search: SPS 4.
Fighter direction: SPS 8B.
Air control: SPS 8A.
Fire control: SPG 34.
Navigation: MP 1402.



MINAS GERAIS *9/1972, USN*

MINAS GERAIS *1972, Brazilian Navy*

DESTROYERS

2 Ex-US "GEARING (FRAM I)" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MARCILIO DIAS (ex-USS *Henry W. Tucker* DD 875)	D 25	Consolidated Steel	29 May 1944	8 Nov 1944	12 Mar 1945
MARIZ e. BARROS (ex-USS *Brinkley Bass* DD 887)	D 26	Consolidated Steel	20 Dec 1944	26 May 1945	1 Oct 1945

Displacement, tons: 2 425 standard; 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Aircraft: 1 Wasp helicopter
Guns: 4—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 1 Asroc 8-tube launcher; 2 triple Mk 32 torpedo tubes
Main engines: 2 GE geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 32
Range, miles: 5 800 at 15 knots
Complement: 274 (14 officers, 260 men)

Enlarged "Allen M. Sumner" class: 14 ft longer.
Transferred 8 December 1973.

Radar: SPS 10 and SPS 40.

Sonar: SQS 23.

MARIZ e. BARROS *1977, Brazilian Navy*

5 Ex-US "FLETCHER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
PARAÑA (ex-USS *Cushing*, DD 797)	D 29	Bethlehem Steel Co (Staten Island)	3 May 1943	30 Sep 1943	17 Jan 1944
PERNAMBUCO (ex-USS *Hailey*, DD 556)	D 30	Seattle-Tacoma S.B. Corp. (Seattle)	1 Apr 1942	9 Mar 1943	30 Sep 1943
PIAUI (ex-USS *Lewis Hancock*, DD 675)	D 31	Federal S.B. and D.D. Co	31 Mar 1943	1 Aug 1943	29 Sep 1943
SANTA CATARINA (ex-USS *Irwin*, DD 794)	D 32	Bethlehem Steel Co (San Pedro)	2 May 1943	31 Oct 1943	14 Feb 1944
MARANHAO (ex-USS *Shields*, DD 596)	D 33	Puget Sound Navy Yard	10 Aug 1943	25 Sep 1944	8 Feb 1945

Displacement, tons: 2 050 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·4 × 18 *(114·8 × 12 × 5·5)*
Guns: 5—5 in *(127 mm)*/38 (except *Pernambuco:* 4—5 in); 10—40 mm (2 quad, 1 twin) *(Paraña* and *Santa Caterina)*;
Torpedo tubes: 5—21 in *(533 mm)* (not in *Maranhao*)
A/S weapons: 2 Hedgehogs; 1 DC rack; 2 side launching torpedo racks *(Paraña* and *Pernambuco)*; 2 triple Mk 32 torpedo tubes (remainder)
Main engines: 2 GE geared turbines; 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 35
Oil fuel, tons: 560
Range, miles: 5 000 at 15 knots; 1 260 at 30 knots
Complement: 260

Paraña transferred on loan 20 July 1961 and subsequently by sale 18 January 1973; *Pernambuco* on loan 20 July 1961 and *Maranhao* by sale 1 July 1972. *Piaui* was transferred on loan 2 August 1967 whilst *Santa Catarina* was transferred on loan 10 May 1968, and both by sale 11 April 1973.

PARAÑA *1978, Brazilian Navy*

Radar: Search: SPS 6.
Tactical: SPS 10.
Fire control: I Band.

Sonar: SQS 4, 29 or 32.

1 Ex-US "ALLEN M. SUMNER" and 4 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASSES

Name	No.	Builders	Laid down	Launched	Commissioned
MATO GROSSO (ex-USS *Compton*, DD 705)	D 34	Federal S.B. & D.D. Co	28 Mar 1944	17 Sep 1944	4 Nov 1944
SERGIPE (ex-USS *James C. Owens* DD 776)	D 35	Bethlehem Steel Co (San Pedro)	9 Apr 1944	1 Oct 1944	17 Feb 1945
ALAGOAS (ex-USS *Buck* DD 761)	D 36	Bethlehem Steel Co (San Francisco)	1 Feb 1944	11 Mar 1945	28 June 1946
RIO GRANDE DO NORTE (ex-USS *Strong* DD 758)	D 37	Bethlehem Steel Co (San Francisco)	25 July 1943	23 Apr 1944	8 Mar 1945
ESPIRITO SANTO (ex-USS *Lowry* DD 770)	D 38	Bethlehem Steel Co (San Pedro)	1 Aug 1943	6 Feb 1944	23 July 1944

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·5 × 5·8)*
Aircraft: 1 Wasp helicopter (except *Mato Grosso*)
Missiles: SAM—Seacat *(Mato Grosso* only*)*
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 2—triple Mk 32 torpedo tubes; 2 ahead-firing Hedgehogs; Depth charges *(Mato Grosso)*
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 34
Range, miles: 4 600 at 15 knots, 1 260 at 30 knots
Complement: 274

Transferred to Brazil as follows: *Mato Grosso* 27 September 1972, *Sergipe* and *Alagoas* 16 July 1973, *Espirito Santo* 29 October 1973 and *Rio Grande do Norte* 31 October 1973, the last four being FRAM II conversions, *Mato Grosso* being of the original "Sumner" class.

Gunnery: 3-in guns in *Mato Grosso* removed before transfer.

Missiles: Seacat system transferred to *Mato Grosso* from deleted *Mariz e. Barros* of previous "Marcilio Dias" class.

Radar: SPS 6 and 10 and Mk 20 director *(Mato Grosso).* SPS 10 and 37 *(Espirito Santo).* SPS 10 and 40 (remainder).

Sonar: SQS 31 *(Mato Grosso).* SQA 10 and SQS 40 (remainder).

ESPÍRITO SANTO *1978, Brazilian Navy*

FRIGATES

Note: There are plans to build 12 missile frigates of about 1 600 tons. At present attempts are being made to conclude a bilateral agreement, one of the stipulations to be that no US equipment is to be used. Balance of payments problems may hold up such an agreement.

6 "NITEROI" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
NITEROI	F 40	Vosper Thornycroft Ltd	8 June 1972	8 Feb 1974	20 Nov 1976
DEFENSORA	F 41	Vosper Thornycroft Ltd	14 Dec 1972	27 Mar 1975	5 Mar 1977
CONSTITUIÇÃO	F 42	Vosper Thornycroft Ltd	13 Mar 1974	15 Apr 1976	31 Mar 1978
LIBERAL	F 43	Vosper Thornycroft Ltd	2 May 1975	7 Feb 1977	18 Nov 1978
INDEPENDENCIA	F 44	Navyard, Rio de Janeiro	11 June 1972	2 Sep 1974	3 Sep 1979
UNIÃO	F 45	Navyard, Rio de Janeiro	11 June 1972	14 Mar 1975	Sep 1980

Displacement, tons: 3 200 standard; 3 800 full load
Dimensions, feet (metres): 424 × 44·2 × 18·2 *(129·2 × 13·5 × 5·5)*
Aircraft: 1 WG 13 Lynx helicopter
Missiles: Both versions: SAM; Seacat (2 triple launchers with 60 missiles);
GP version: SSM; Exocet (2 twin launchers);
A/S version: Ikara (1 single launcher with 10 missiles) (Branik system)
Guns: GP version: 2—4·5 in *(117 mm)*/55 Vickers Mk 8; A/S version: 1—4·5 in/55 Vickers Mk 8; 2—40 mm/70
A/S weapons: 1 Bofors 375 mm twin tube A/S rocket launcher; 2 Plessey STWS1 triple torpedo tube mountings; 1 DC rail
Main engines: CODOG system; 2 Rolls-Royce Olympus TM3B gas turbines = 56 000 bhp; 4 MTU diesels = 15 760 shp
Speed, knots: 30 on gas turbines; 22 on diesels
Range, miles: 5 300 at 17 knots (2 diesels); 4 200 at 19 knots (4 diesels); 1 300 at 28 knots (gas turbine)
Endurance: 45 days stores; 60 days provisions
Complement: 200 (21 officers, 179 men)

CONSTITUIÇÃO

4/1978, Vosper Thornycroft

Exceptionally economical in personnel, amounting to a 50 per cent reduction of manpower in relation to previous warships of this size and complexity. *Niteroi* started trials in January 1976. *Defensora* started trials October 1976.
Seventh ship with differing armament was to be ordered from Navyard, Rio de Janeiro—to be used as training ship—but financial problems may cause this plan to be dropped.

Class: F 40, 41, 44 and 45 are of the A/S configuration. F 42 and 43 are General Purpose design.

Contract: A contract announced on 29 September 1970, valued at about £100 million, was signed between the Brazilian Government and Vosper Thornycroft Ltd, England for the design and building of these six Vosper Thornycroft Mark 10 frigates comparable with the British Type 42 guided missile destroyers being built for the Royal Navy.

Construction: Materials, equipment and lead-yard services supplied by Vosper Thornycroft at Navyard, Rio de Janeiro. Fitted with retractable stabilisers.

Electronics: CAAIS equipment by Ferranti (FM 1600B computers). ECM by Decca.

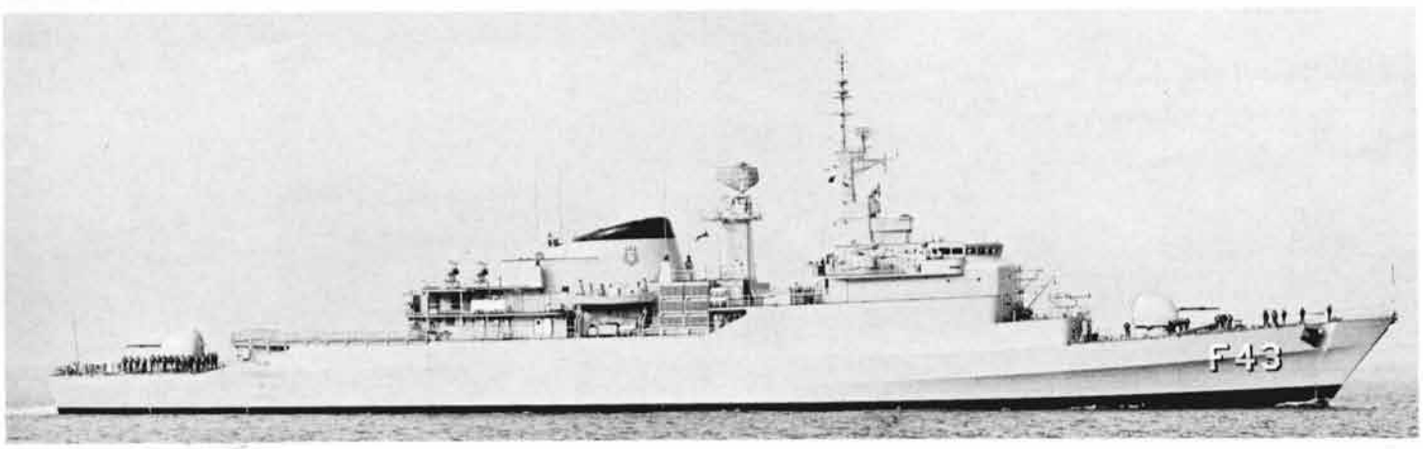
UNIÃO

1980, Ronaldo S. Olive

Radar: Air warning: One Plessey AWS-2 with Mk 10 IFF.
Surface warning: One Signaal ZW-06.
Weapon control and tracking: Two Selenia RTN-10X.
Ikara tracker: One set in A/S ships only.

Sonar: One EDO 610E medium range.
One EDO 700E VDS (A/S ships only).

Trials: *Constituição*, October 1977; *Liberal*, July 1978.



LIBERAL

8/1979, J. L. M. van der Burg

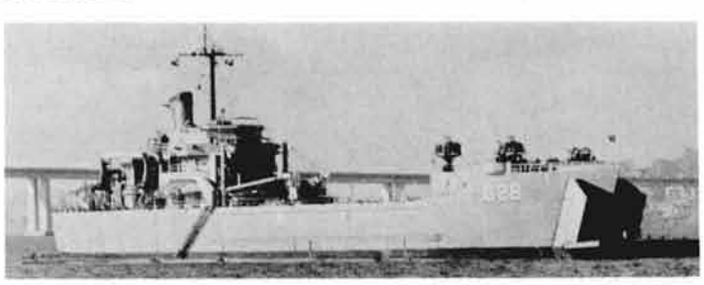
AMPHIBIOUS FORCES

1 Ex-US "DE SOTO COUNTY" CLASS (LST)

Name	*No.*	*Builders*	*Commissioned*
DUQUE DE CAXAIS (ex-USS *Grant County* LST 1174)	G 26	Avondale, New Orleans	8 Nov 1957

Displacement, tons: 3 828 light; 7 804 full load
Dimensions, feet (metres): 445 × 62 × 16·9 *(135·7 × 18·9 × 5·2)*
Guns: 2—3 in/50 (twin)
Main engines: Diesels; 2 shafts; cp propellers; 13 700 shp = 17·2 knots
Complement: 175 (11 officers, 164 men)
Troops: Approx 575

Launched 12 October 1956 and transferred 15 January 1973, purchased December 1977. Now has Stülcken heavy-lift gear fitted.



DUQUE DE CAXAIS

1980, Ronaldo S. Olive

1 Ex-US "511-1152" CLASS (LST)

Name	*No.*	*Builders*	*Commissioned*
GARCIA D'AVILA (ex-USS *Outagamie County* LST 1073)	G 28	Bethlehem Steel Co Higham, Mass	17 Apr 1945

Displacement, tons: 1 653 standard; 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 4·3)*
Guns: 8—40 mm (2 twin, 4 single)
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Complement: 119
Troops: 147

Transferred on loan to Brazil by US Navy 21 May 1971, purchased 1 December 1973.

GARCIA D'AVILA *1977, Brazilian Navy*

21 EDVP

Built in Japan 1959-60. Some, including EDVP 5, in Mato Grosso Flotilla.

7 EDVP

Fitted with Saab-Skania Diesels of 153 hp. 37 ft long and with GRP hulls. Built in Brazil in 1971-73. Can carry 36 men or equivalent amount of equipment.

4 US "LCU 1610" TYPE

GUARAPARI L 10 **TAMBAU** L11 **CAMBORIU** L 12 **TRAMANDAI**

Of 390 tons full load and 134·5 ft (pp) *(41 m)*. Capable of 11 knots. L 10 launched 16 June 1977, L 11 on 14 September 1977. Both commissioned 27 March 1978. L 12 laid down 27 March 1978 but no information available on *Tramandai*.

3 EDVM

Of LCM type.

PATROL FORCES

10 "IMPERIAL MARINHEIRO" CLASS

Name	*No.*	*Builders*	*Commissioned*
IMPERIAL MARINHEIRO	V 15	Netherlands	8 June 1955
IGUATEMI	V 16	Netherlands	17 Sep 1955
IPIRANGA	V 17	Netherlands	22 Sep 1955
FORTE DE COIMBRA	V 18	Netherlands	26 July 1955
CABOCLO	V 19	Netherlands	Apr 1954
ANGOSTURA	V 20	Netherlands	1955
BAHIANA	V 21	Netherlands	27 June 1955
MEARIM	V 22	Netherlands	3 Aug 1955
PURUS	V 23	Netherlands	Apr 1955
SOLIMOES	V 24	Netherlands	1955

Displacement, tons: 911 standard
Dimensions, feet (metres): 184 × 30·5 × 11·7 *(56 × 9·3 × 3·6)*
Guns: 1—3 in/50; 4—20 mm
Main engines: 2 Sulzer diesels; 2 160 bhp = 16 knots
Oil fuel, tons: 135
Complement: 60

Actually fleet tugs classed as corvettes. Equipped for fire-fighting. *Imperial Marinheiro* employed as submarine support ship.

IGUATEMI *1977, Brazilian Navy*

2 "PEDRO TEIXEIRA" CLASS (RIVER PATROL SHIPS)

Name	*No.*	*Builders*	*Commissioned*
PEDRO TEIXEIRA	P 20	Arsenal de Marinha, Rio de Janeiro	17 Dec 1973
RAPOSO TAVARES	P 21	Arsenal de Marinha, Rio de Janeiro	17 Dec 1973

Displacement, tons: 700 standard
Dimensions, feet (metres): 203·4 × 30·7 × 6·3 *(62 × 9·4 × 1·9)*
Guns: 1—40 mm; 2—81 mm mortars 6—5 MGs
Main engines: 4 diesels; 2 shafts = 16 knots

Helicopter platform and hangar fitted. Carry two LCVPs. *Pedro Teixeira* launched 14 October 1970—*Raposo Tavares* 11 June 1972. Belong to Amazon Flotilla.

PEDRO TEIXEIRA *1974, Brazilian Navy*

1 THORNYCROFT TYPE (RIVER MONITOR)

Name	*No.*	*Builders*	*Commissioned*
PARNAIBA	U 17 (ex-P 2)	Arsenal de Marinha, Rio de Janeiro	Nov 1937

Displacement, tons: 620 standard; 720 full load
Dimensions, feet (metres): 180·5 × 33·3 × 5·1 *(55 × 10·1 × 1·6)*
Guns: 1—3 in/50; 2—47 mm; 2—40 mm, 6—20 mm
Armour: 3 in side and partial deck protection
Main engines: 2 Thornycroft triple expansion; 2 shafts; 1 300 ihp = 12 knots
Boilers: Two 3-drum type, working pressure 250 psi
Oil fuel, tons: 70
Range, miles: 1 350 at 10 knots
Complement: 90

Laid down 11 June 1936. Launched 2 September 1937. In Mato Grosso Flotilla. Rearmed with the above guns in 1960.

PARNAIBA *1971, Brazilian Navy*

3 "RORAIMA" CLASS (RIVER PATROL SHIPS)

Name	*No.*	*Builders*	*Commissioned*
RORAIMA	P 30	Maclaren, Niteroi	Mar 1974
RONDONIA	P 31	Maclaren, Niteroi	1974
AMAPA	P 32	Maclaren, Niteroi	Jan 1976

Displacement, tons: 340 standard; 365 full load
Dimensions, feet (metres): 147·6 × 27·7 × 4·2 *(45 × 8·4 × 1·3)*
Guns: 1—40 mm; 2—81 mm mortars; 6—5 MGs
Main engines: Diesels; 2 shafts; 1 814 shp = 14·5 knots
Complement: 54

Rondonia launched 10 January, *Amapa* 9 March 1973. Carry two LCVPs. Belong to Amazon Flotilla.

RONDONIA *1977, Brazilian Navy*

LIGHT FORCES

Note: A new class of Fast Attack Craft is projected.

6 "PIRATINI" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PIRATINI (ex-PGM 109)	P 10	Arsenal de Marinha, Rio de Janeiro	Nov 1970
PIRAJA (ex-PGM 110)	P 11	Arsenal de Marinha, Rio de Janeiro	Mar 1971
PAMPEIRO (ex-PGM 118)	P 12	Arsenal de Marinha, Rio de Janeiro	May 1971
PARATI (ex-PGM 119)	P 13	Arsenal de Marinha, Rio de Janeiro	July 1971
PENEDO (ex-PGM 120)	P 14	Arsenal de Marinha, Rio de Janeiro	Sep 1971
POTI (ex-PGM 121)	P 15	Arsenal de Marinha, Rio de Janeiro	Oct 1971

Displacement, tons: 105 standard
Dimensions, feet (metres): 95 × 19 × 6·5 *(29 × 5·8 × 2)*
Guns: 3—·5 MGs; 1—81 mm mortar
Main engines: 4 diesels; 1 100 bhp = 17 knots
Range, miles: 1 700 at 12 knots
Complement: 15 officers and men

Built under offshore agreement with the USA.

PIRAJA *1977, Brazilian Navy*

MINE WARFARE FORCES

6 "SCHÜTZE" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
ARATU	M 15	Abeking and Rasmussen	5 May 1971
ANHATOMIRIM	M 16	Abeking and Rasmussen	30 Nov 1971
ATALAIA	M 17	Abeking and Rasmussen	13 Dec 1972
ARACATUBA	M 18	Abeking and Rasmussen	13 Dec 1972
ABROLHOS	M 19	Abeking and Rasmussen	16 Apr 1975
ALBARDÃO	M 20	Abeking and Rasmussen	21 July 1975

Displacement, tons: 230 standard; 280 full load
Dimensions, feet (metres): 154·9 × 23·6 × 6·9 *(47·2 × 7·2 × 2·1)*
Gun: 1—40 mm
Main engines: 4 Maybach diesels; 2 shafts; 4 500 bhp = 24 knots
Range, miles: 710 at 20 knots
Complement: 39

Wooden hulled. First four ordered in April 1969 and last pair in November 1973. Same design as West German "Schütze" class. Can carry out wire, magnetic and acoustic sweeping.

ARATU *1977, Brazilian Navy*

SURVEY SHIPS

Notes: (a) *Alvaro Alberto* deleted as non-Government vessel.
(b) Reported that a Navigation Aids Vessel was laid down at Rio de Janeiro on 1 August 1978.

1 Ex-US "ROBERT D. CONRAD" CLASS

Name	*No.*	*Builders*	*Commissioned*
ALMIRANTE CÂMARA (ex-USNS *Sands* T-AGOR 6)	H 41	Marietta Co, Point Pleasant West Va.	8 Feb 1965

Displacement, tons: 1 200 standard; 1 380 full load
Dimensions, feet (metres): 208·9 × 40 × 15·3 *(63·7 × 12·2 × 4·7)*
Main engines: Diesel-electric; Caterpillar Tractor Co diesels; 10 000 bhp; 1 shaft = 13·5 knots
Range, miles: 12 000 at 12 knots
Complement: 26 (+15 scientists)

Built specifically for oceanographic research. Equipped for gravimetric, magnetic and geological research. Has bow thruster, 10 ton crane and 620 hp gas turbine for providing "quiet power". Transferred 1 July 1974.

ALMIRANTE CÂMARA (as USNS *Sands*) *USN*

2 "SIRIUS" CLASS

Name	*No.*	*Builders*	*Commissioned*
SIRIUS	H 21	Ishikawajima Co Ltd, Tokyo	1 Jan 1958
CANOPUS	H 22	Ishikawajima Co Ltd, Tokyo	15 Mar 1958

Displacement, tons: 1 463 standard; 1 800 full load
Dimensions, feet (metres): 255·7 × 39·3 × 12·2 *(78 × 12·1 × 3·7)*
Guns: 1—3 in; 4—20 mm MGs
Main engines: 2 Sulzer diesels; 2 shafts; 2 700 bhp = 15·75 knots
Range, miles: 12 000 at cruising speed of 11 knots
Complement: 116

Laid down 1955-56. Helicopter platform aft. Special surveying apparatus, echo sounders, Raydist equipment, sounding machines installed, and helicopter, landing craft (LCVP), jeep, and survey launches carried. All living and working spaces are air-conditioned. Cp propellers.

SIRIUS *1980, Ronaldo S. Olive*

3 "ARGUS" CLASS

Name	*No.*	*Builders*	*Commissioned*
ARGUS	H 31	Arsenal da Marinha, Rio de Janeiro	29 Jan 1959
ORION	H 32	Arsenal da Marinha, Rio de Janeiro	11 June 1959
TAURUS	H 33	Arsenal da Marinha, Rio de Janeiro	23 Apr 1959

Displacement, tons: 250 standard; 343 full load
Dimensions, feet (metres): 147·7 × 20 × 6·6 *(45 × 6·1 × 2)*
Guns: 2—20 mm
Main engines: 2 diesels coupled to two shafts; 1 200 bhp = 15 knots
Oil fuel, tons: 35
Range, miles: 1 200 at 15 knots
Complement: 42

All laid down in 1955 and launched between December 1957—February 1958.

ORION *1977, Brazilian Navy*

Name	*No.*	*Builders*	*Launched*
ALMIRANTE SALDANHA	H 10 (ex-U 10, ex-NE 1)	Vickers, Barrow	19 Dec 1933

Displacement, tons: 3 325 standard; 3 825 full load
Dimensions, feet (metres): 307·2 × 52 × 18·2 *(93·6 × 15·8 × 5·5)*
Main engine: Diesel; 1 400 bhp = 11 knots
Range, miles: 12 000 at 10 knots
Complement: 218

Former training ship with a total sail area of 25 990 sq ft and armed with four 4-in guns, one 3-in gun and four 3-pounders. Cost £314 500. Instructional minelaying gear was included in equipment. The single 21 in torpedo tube was removed. Re-classified as an Oceanographic Ship (NOc) August 1959, and completely remodelled by 1964. A photograph of this vessel as a sailing ship appears in the 1952-53 to 1959-60 editions.

ALMIRANTE SALDANHA (old pennant number) *1977, Brazilian Navy*

1 LIGHTHOUSE TENDER

Name	*No.*	*Builders*	*Commissioned*
GRAÇA ARANHA	H 34	Elbin, Niteroi	9 Sep 1976

Displacement, tons: 2 300
Dimensions, feet (metres): 247·6 × 42·6 × 12·1 *(75·5 × 13 × 3·7)*
Aircraft: 1 helicopter
Main engine: 1 diesel; 2 000 hp; 1 shaft = 14 knots
Complement: 95

Laid down in 1971 and launched 23 May 1974. Fitted with collapsible helo-hangar.

GRAÇA ARANHA *1976, Brazilian Navy*

SURVEY LAUNCHES

PARAIBANO H 11
RIO BRANCO H 12
NOGUEIRA DA GAMA (ex-*Jaceguai*) H 14
ITACURUSSA H 15
CAMOCIM H 16
CARAVELAS H 17

Displacement, tons: 32 standard; 50 full load
Dimensions, feet (metres): 52·5 × 15·1 × 4·3 *(16 × 4·6 × 1·3)*
Main engine: 1 diesel; 165 bhp = 11 knots
Range, miles: 600 at 11 knots
Complement: 11

First pair launched 1968—last pair in 1972. Built by Bormann, Rio de Janeiro.

CARAVELAS *1977, Brazilian Navy*

4 BUOY TENDERS

MESTRE JOÃO DOS SANTOS H 13
CASTELHANOS H 24
FAROLEIRO NASCIMENTO H 25
FAROLEIRO AREAS H 27

Taken over 1973.

SUBMARINE RESCUE SHIP

Name	*No.*	*Builders*	*Launched*
GASTÃO MOUTINHO (ex-USS *Skylark* ASR 20)	K 10	Charleston S.B. & D.D. Co	19 Mar 1946

Displacement, tons: 1 235 standard; 1 740 full load
Dimensions, feet (metres): 205 × 38·5 × 15·3 *(62·5 × 11·7 × 4·7)*
Main engine: Diesel-electric; 1 shaft; 3 000 bhp = 14 knots
Complement: 85

Converted to present form in 1947. Fitted with special pumps, compressors and submarine rescue chamber. Fitted for oxy-helium diving. Transferred 30 June 1973.

GASTÃO MOUTINHO *1975, Brazilian Navy*

REPAIR AND SUPPORT SHIPS

Note: A logistic support ship is planned.

Name	*No.*	*Builders*	*Commissioned*
BELMONTE (ex-USS *Helios* ARB 12, ex-LST 1127)	G 24	Maryland D.D. Co, Baltimore	26 Feb 1945

Displacement, tons: 1 625 light; 2 030 standard; 4 100 full load
Dimensions, feet (metres): 328 × 50 × 11 *(100 × 15·2 × 3·4)*
Guns: 8—40 mm
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Oil fuel, tons: 1 000
Range, miles: 6 000 at 9 knots

Former US battle damage repair ship (ex-LST). Laid down 23 November 1944. Launched 14 February 1945. Loaned to Brazil by USA in January 1962 under MAP and by purchase 28 December 1977.

BAURU (ex-USS *McAnn* DE 179) U 28

An ex-US "Cannon" class DE, last of eight transferred in 1944. Of 1 900 tons full load used as support vessel in Guanabara Bay.

TRANSPORTS

4 "BARROSO PEREIRA" CLASS

Name	*No.*	*Builders*	*Commissioned*
BARROSO PEREIRA	G 16	Ishikawajima Co Ltd, Tokyo	1 Dec 1954
ARY PARREIRAS	G 21	Ishikawajima Co Ltd, Tokyo	29 Dec 1956
SOARES DUTRA	G 22	Ishikawajima Co Ltd, Tokyo	23 Mar 1957
CUSTÓDIO DE MELLO	U 26	Ishikawajima Co Ltd, Tokyo	30 Dec 1954

Displacement, tons: 4 800 standard; 7 300 full load
Measurement, tons: 4 200 deadweight; 4 879 gross (Panama)
Dimensions, feet (metres): 362 pp; 391·8 oa × 52·5 × 20·5 *(110·4; 119·5 × 16 × 6·3)*
Guns: 4—3 in (U 26); 2—3 in (others); 2/4—20 mm
Main engines: Ishikawajima double reduction geared turbines; 2 shafts; 4 800 shp = 17·67 knots (sea speed 15 knots)
Boilers: 2 Ishikawajima 2-drum water tube type, oil fuel
Complement: 127 (Troop capacity 497)

Transports and cargo vessels. Helicopter landing platform aft except in U26. Troop carrying capacity for 497, with commensurate medical, hospital and dental facilities. Working and living quarters are mechanically ventilated with partial air conditioning. Refrigerated cargo space 15 500 cubic ft. Can carry 4 000 tons of cargo. *Custódio de Mello* has been classified as a training ship since July 1961 with additional deckhouses. The other three operate commercially from time to time.

BARROSO PEREIRA *1979, Michael D. J. Lennon*

HARBOUR TRANSPORTS

6 "RIO DOCE" CLASS

Name	*No.*	*Builders*	*Commissioned*
RIO DOCE	U 20	Netherlands	12 May 1954
RIO DAS CONTAS	U 21	Netherlands	15 Sep 1954
RIO FORMOSO	U 22	Netherlands	Oct 1954
RIO REAL	U 23	Netherlands	1955
RIO TURVO	U 24	Netherlands	16 Dec 1954
RIO VERDE	U 25	Netherlands	12 Aug 1954

Displacement, tons: 150
Dimensions, feet (metres): 120 × 21·3 × 6·2 *(36·6 × 6·5 × 1·9)*
Main engines: 2 Sulzer 6-TD24; 900 bhp = 14 knots

Can carry 600 passengers.

SARGENTO BORGES R 47

Displacement, tons: 108·5
Dimensions, feet (metres): 91·8 × 21·3 × 4·9 *(28 × 6·5 × 1·5)*
Main engines: 2 diesels; 480 bhp = 10 knots

Built by Ebrasa, Itajai. Launched 29 August 1974. Can carry 106 passengers.

4 "RIO PARDO" CLASS

RIO PARDO U 40 **RIO NEGRO** U 41 **RIO CHUI** U 42 **RIO OIAPOQUE** U 43

Displacement, tons: 150
Dimensions, feet (metres): 116·8 × 21·3 × 6·2 *(35·6 × 6·5 × 1·9)*
Main engines: 2 diesels = 14 knots

Capable of carrying 600 passengers. Completed by Inconav de Niteroi 1975-76.

6 "ANCHOVA" CLASS

Name	*No.*	*Builders*	*Commissioned*
ANCHOVA	R 54	Brazil	1965
ARENQUE	R 55	Brazil	1965
ATUM	R 56	Brazil	1966
ACARA	R 57	Brazil	1966
AGULHA	R 58	Brazil	1967
ARUANA	R 59	Brazil	1967

Displacement, tons: 11
Dimensions, feet (metres): 42·6 × 12·5 × 3·9 *(13 × 3·8 × 1·2)*
Main engines: 2 diesels; 280 hp = 25 knots
Range, miles: 400 at 20 knots
Complement: 3 plus 12 passengers

PARAGUASSU (ex-*Guarapunava*) G 15 (RIVER TRANSPORT)

Displacement, tons: 285
Dimensions, feet (metres): 131·2 × 23 × 3·9 *(40 × 7 × 1·2)*
Speed knots: 12
Range, miles: 2 500 at 10 knots

Acquired 1971. In Mato Grosso Flotilla.

TANKERS

Name	*No.*	*Builders*	*Commissioned*
MARAJO	G 27	Ishikawajima do Brasil-Estaleiros SA	22 Oct 1968

Measurements, tons: 10 500 deadweight
Dimensions, feet (metres): 440·7 × 63·3 × 24 *(134·4 × 19·3 × 7·3)*
Main engine: Diesel; 1 shaft = 13·6 knots
Capacity, (cu metres): 14 200
Range, miles: 9 200 at 13 knots
Complement: 80

Laid down 13 December 1966 and launched 31 January 1968.

MARAJÓ *1980, Ronaldo S. Olive*

Name	*No.*	*Builders*	*Launched*
POTENGI	G 17	Papendrecht, Netherlands	16 Mar 1938

Displacement, tons: 600
Dimensions, feet (metres): 178·8 × 24·5 × 6 *(54·5 × 7·5 × 1·8)*
Main engines: Diesels; 2 shafts; 550 bhp = 10 knots
Oil fuel, tons: 450
Complement: 19

Employed in the Mato Grosso Flotilla on river service.

MARTINS DE OLIVEIRA (ex-*Gastao Moutinhb*) R 11

Displacement, tons: 588
Dimensions, feet (metres): 162 × 23·1 × 7·9 *(49·4 × 7 × 2·4)*
Speed, knots: 10·3

Taken over 1973.

ANITA GARIBALDI

TUGS

Note: One fleet tug projected.

3 Ex-US "SOTOYOMO" CLASS

TRITÃO (ex-ATA 234) R 21 **TRIDENTE** (ex-ATA 235) R 22 **TRIUNFO** (ex-ATA 236) R 23

Displacement, tons: 534 standard; 835 full load
Dimensions, feet (metres): 143 × 33 × 13·2 *(43·6 × 10 × 4)*
Guns: 2—20 mm
Main engines: General Motors diesel-electric; 1 500 hp = 13 knots

All built by Gulfport Boiler & Welding Works, Inc, Port Arthur, Texas, and launched in 1944. R 21 completed 11 December 1945 and R 22 3 December 1945. Sold to Brazil 26 March 1947 (R 21 and 22) and 22 April 1947 (R 23).

3 COASTAL TUGS

ISAIAS DE NORONHA **LAHMEYER** **D.N.O.G.**

Isaias de Noronha 154 ft long, 200 tons, built in Brazil in 1972. Other two of 100 tons and 105 ft long. Based at Aratu.

LAURINDO PITTA R 14

514 tons. Vickers 1910. Reconstructed 1969.

AUDAZ R 31
CENTAURO R 32
GUARANI R 33
LAMEGO R 34
PASSO da PATRIA R 35
VOLUNTARIO R 36

Displacement, tons: 130 tons
Dimensions, feet (metres): 90·5 × 23·6 × 10·2 *(27·6 × 7·2 × 3·1)*
Main engine: Womag diesel of 765 hp = 11 knots
Complement: 12

Built by Holland Nautic Yard, Netherlands in 1953.

TRAINING SHIPS

ALMIRANTE NASCMENTO +2

Of same particulars as *Sargento Borges* (Harbour Transport) completed 1980-81.

TORPEDO TRANSPORTS

MIGUEL DOS SANTOS **APRENDIZ LEDIO CONCEIÇÃO**

Built in 1968.

FLOATING DOCKS

CIDADE DE NATAL (ex-AFDL 39)

Displacement, tons: 7 600
Length, feet (metres): 390·3 *(119)*
Beam, feet (metres): 86·9 *(26·5)*
Capacity, tons: 2 800

Concrete floating dock loaned to Brazil by US Navy 10 November 1966. Purchased 28 December 1977.

ALMIRANTE JERONIMO GONÇALVES (ex-*Goiaz* AFDL 4) G 26

Displacement, tons: 3 000
Length, feet (metres): 200 *(61)*
Beam, feet (metres): 44 *(13·4)*
Capacity, tons: 1 000

Steel floating dock loaned to Brazil by US Navy 10 November 1966. Purchased 28 December 1977.

AFONSO PENA (ex-*Ceara*, ex-ARD 14) G 25

Displacement, tons: 5 200
Dimensions, feet (metres): 402·0 × 81·0 *(122·6 × 24·7)*

Transferred from the US Navy to the Brazilian Navy in 1963. Purchased 28 December 1977.

— (ex-US YFN 903)

Dock attendant craft. Transferred on loan. Purchased 28 December 1977.

FLOATING CRANES

At least two in service at Rio de Janeiro—one of 100 tons capacity, one of 30 tons.

AUXILIARIES

ALMIRANTE BRASIL R 13
ARGENTINA R 51
A. BARBOSA R 27
DR. GONDIM R 38
GUAIRIA R 40
IGUAÇU R 41
MARIA QUITERIA R 44
MARISCO
TENENTE CLAUDIO
DHN-225

BRUNEI

(Askar Melayu Di-Raja Brunei (Royal Brunei Malay Regiment) 1st Flotilla and Special Boat Squadron)

Commanding Officer

Lieutenant-Colonel (Commander) A. H. F. Wilks, PANB, MBE, RN

Base

KDB *Hassanal* Marine Base—First Flotilla

Prefix to Ships' Names

KDB (Kapal Di-Raja Brunei)

Personnel

(a) 1981: 333 (32 officers and 301 ratings)—First Flotilla
91 (4 officers, 87 men)—Special Boat Squadron
(b) Voluntary service
(c) The First Flotilla is responsible for offshore work and the SBS for riverine affairs.

DELETIONS

1977 *Pahlawan*
1978 *Saleha, Masna*
1979 *Noraim*

Mercantile Marine

Lloyd's Register of Shipping:
2 vessels of 899 tons gross

3 "WASPADA" CLASS (FAST ATTACK CRAFT-MISSILE)

Name	*No.*	*Builder*	*Commissioned*
WASPADA	P 02	Vosper Singapore	1978
PEJUANG	P 03	Vosper Singapore	1979
SETERIA	P 04	Vosper Singapore	1979

Displacement, tons: 150 full load
Dimensions, feet (metres): 121 × 23·5 × 6 *(36·9 × 7·2 × 1·8)*
Missiles: SSM; MM 38 Exocet (two single launchers)
Guns: 2—30 mm Oerlikon GCM-B01 (twin); 2 MGs
Main engines: 2 MTU 538TB 91 diesels; 9 000 bhp; 2 shafts = 32 knots
Range, miles: 1 200 at 14 knots
Complement: 24 (4 officers, 20 ratings)

Welded steel hull with aluminium alloy superstructure.

Flares: Two MOD(N) 2 in flare launchers

Gunnery: Optical fire director with Decca ranging radar and Sperry 1412A digital computer.

Missiles: Sea Archer system with Sperry Co-ordinate Calculator.

Radar: Navigation: Decca TM 1229.

WASPADA *6/1980, Dr. Giorgio Arra*

3 "PERWIRA" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PERWIRA	P 14	Vosper Thornycroft (Singapore)	9 Sep 1974
PEMBURU	P 15	Vosper Thornycroft (Singapore)	17 June 1975
PENYERANG	P 16	Vosper Thornycroft (Singapore)	24 June 1975

Displacement, tons: 30
Dimensions, feet (metres): 71 × 20 × 5 *(21·7 × 6·1 × 1·2)*
Guns: 2—20 mm Hispano Suiza; 2—7·62 MGs
Main engines: 2 MTU MB 12V 331 TC81 diesels; 2 450 bhp = 32 knots
Range, miles: 600 at 22 knots; 1 000 at 16 knots
Complement: 12

Perwira launched May 1974. Other two ordered June 1974. Of all wooden construction on laminated frames. Fitted with enclosed bridges—modified July 1976.

Radar: Decca 916A *(Perwira)*; Decca 1216A (Others).

PERWIRA *1979, Royal Brunei Malay Regiment*

3 RIVER PATROL CRAFT

Name	*No.*	*Conversion*
BENDAHARA	P 21	1974
MAHARAJALELA	P 22	1975
KEMAINDERA	P 23	1975

Displacement, tons: 10
Dimensions, feet (metres): 47 × 12 × 3 *(14·3 × 3·6 × 0·9)*
Guns: 2 twin MG 42, 7·62 mm
Main engines: 2 General Motors diesels; 334 bhp = 20 knots
Range, miles: 200
Complement: 6

Fitted with Decca 202 radar. Operated by Special Boat Squadron.

BENDAHARA *1976, Royal Brunei Malay Regiment*

AMPHIBIOUS FORCES

2 CHEVERTON "LOADMASTERS"

Name	*No.*	*Builders*	*Commissioned*
DAMUAN	L 31	Cheverton Ltd, Isle of Wight	May 1976
PUNI	L 32	Cheverton Ltd, Isle of Wight	Feb 1977

Displacement, tons: 60 (64—*Puni*)
Dimensions, feet (metres): 65 × 20 × 3·6 *(19·8 × 6·1 × 1·1)* (length 74·8 *(22·8) Puni*)
Main engines: 2 General Motors V 71 6-cyl diesels; 348 bhp = 9 knots
Range, miles: 1 000
Complement: 8

Radar: Decca RM 1216.

DAMUAN *1976, Royal Brunei Malay Regiment*

24 + 8 FAST ASSAULT BOATS

Rigid Raider type with one machine gun and two 50 hp outboards. Eight more ordered in 1979. Operated by Special Boat Squadron.

1 + 2 PATROL CRAFT

A Rotork Marine FPB 5122 was delivered in 1979 for patrol and transport duties with two more on order.

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
ABADI	—	Vosper, Singapore	1979
TENANG	—	Vosper, Singapore	1979

Dimensions, feet (metres): 59 × 16·1 × 2·6 *(18 × 4·9 × 0·8)*
Main engines: 2 diesels driving waterjets
Speed, knots: 28
Complement: 5

Supplied for the Brunei Police.

BULGARIA

Ministerial

Minister of National Defence:
General Dobri Dzhurov

Headquarters' Appointment

Commander-in-Chief, Navy:
Vice-Admiral VG Yanakiev

Diplomatic Representation

Naval, Military and Air Attaché in London:
Colonel Dimitar Toskov

Personnel

(a) 1981: 10 000 officers and ratings
(b) 3 years' national service (6 000)

Bases

Varna, Burgas, Sozopol, Atiya

Naval Aviation

2 Mi1 helicopters
6 Mi4 (Hound) helicopters

DELETIONS

Light Forces

1975 2 "Kronshstadt" class (numbers transferred to "Poti" class)
1978 One "Osa I" class

Mine Warfare Forces

1974 3 "T 301" class
1975 1 "T 301" class
1976 12 "P 02" class

Strength of the Fleet

No building programme available

Type		*Active*
Patrol Submarines		4
Frigates		2
Corvettes		3
Fast Attack Craft (Missile)		4
Fast Attack Craft (Torpedo)		10
Large Patrol Craft		6
Minesweepers (Ocean)		2
Minesweepers (Coastal)		4
Minesweeping Boats		12
Landing Craft		27
Surveying Ships		3
Tugs		8
Tankers Small		3
Salvage Craft		2
Auxiliaries	approx	28

Mercantile Marine

Lloyd's Register of Shipping:
192 vessels of 1 150 299 tons gross

SUBMARINES (PATROL)

2 Ex-SOVIET "WHISKEY" CLASS

POBEDA 11 **SLAVA** 12

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 16·1
(76 × 6·5 × 4·9)
Torpedo tubes: 4—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); 14 torpedoes carried or 28 mines
Main machinery: Diesel-electric; 2 diesels; 4 000 shp; 2 electric motors; 2 700 shp; 2 shafts
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots (surfaced)
Complement: 54

For some time there have been reports of these two being deleted and their names transferred to the "Romeo" boats.

"WHISKEY" Class *1974*

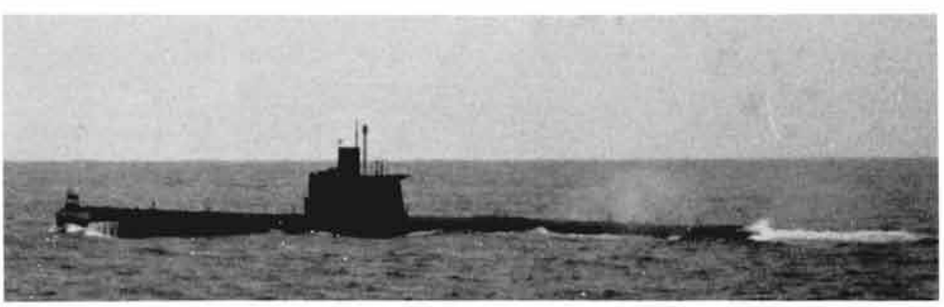
2 Ex-SOVIET "ROMEO" CLASS

— 13 — 14

Displacement, tons: 1 400 surfaced; 1 800 dived
Dimensions, feet (metres): 252 × 23·9 × 18
(76·8 × 7·3 × 5·5)
Torpedo tubes: 8—21 in *(533 mm)* (6 bow; 2 stern)
Main machinery: 2 diesels; 4 000 hp; 2 main motors; 4 000 hp; 2 shafts
Speed, knots: 17 surfaced, 14 dived
Range, miles: 16 000 at 10 knots (surfaced)
Complement: 54

Transferred in 1972-73.

Radar. Snoop Plate.



"ROMEO" Class *1974*

FRIGATES

2 Ex-SOVIET "RIGA" CLASS

DRUZKI 15 **SMELI** 16

Displacement, tons: 1 000 standard; 1 320 full load
Dimensions, feet (metres): 300·1 × 33·1 × 10·5
(91·5 × 10·1 × 3·2)
Guns: 3—3·9 in *(100 mm)*; 4—37 mm (twins)
A/S weapons: 4 MBU 1 800 (5 tubes), 4 DCTs
Torpedo tubes: 3—21 in *(533 mm)*
Mines: 50
Main engines: Geared turbines; 2 shafts; 20 000 shp
Speed, knots: 28
Range, miles: 2 000 at 15 knots
Complement: 175

Transferred from the USSR in 1957-58.

Radar: Search: Slim Net.
Navigation: Neptun.
IFF: High Pole, Square Head.
Fire control: Wasp Head/Sun Visor B.

SMELI *6/1980, Selçuk Emre*

CORVETTES

3 Ex-SOVIET "POTI" CLASS

33 34 35

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 200·1 × 25·9 × 9·2 *(61 × 7·9 × 2·8)*
Guns: 2—57 mm (twin)
Torpedo tubes: 4—16 in *(406 mm)* A/S
A/S weapons: 2 MBU 6 000
Main engines: 2 gas turbines; 24 000 hp; 2 M503A diesels; 8 000 shp; 2 shafts; = 34 knots
Range, miles: 2 600 at 16 knots
Complement: 80

Transferred December 1975. Built 1961-68.

Radar: Strut Curve, Muff Cob and Don.

Sonar: One hull-mounted.

Soviet "POTI" Class *1975*

LIGHT FORCES

Note: It is reported, but not confirmed, that three ex-Soviet "Stenka" class have been transferred.

6 Ex-SOVIET "SO 1" CLASS (LARGE PATROL CRAFT)

41 to 46

Displacement, tons: 170 standard; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (2 twin)
A/S weapons: Four 5-barrelled MBU
Main engines: 3 diesels; 7 500 bhp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Steel hulled vessels transferred from the USSR in 1963. Can carry 12 mines.

Radar: Search; Pot Head.
IFF: High Pole A and Dead Duck.

"SO 1" Class *1979*

3 Ex-SOVIET "OSA I" and 1 Ex-SOVIET "OSA II" CLASSES (FAST ATTACK CRAFT—MISSILE)

20 ("Osa II") 21 22 23

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (single launchers)
Guns: 4—30 mm (2 twin, 1 fwd, 1 aft)
Main engines: 3 M503 diesels; 12 000 bhp ("Osa I"); 15 000 ("Osa II") = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Reported to have been transferred from the USSR in 1970-71. No 24 ("Osa I") deleted in 1978.

Radar: Drum Tilt and Square Tie.

"OSA I" Class *1978*

6 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

24 25 26 27 28 29

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twin)
Torpedo tubes: 4—21 in *(533 mm)* (single)
A/S armament: 12 DCs
Main engines: 3 diesels; 3 shafts; 12 000 bhp = 40 knots
Range, miles: 700 at 20 knots
Complement: 16

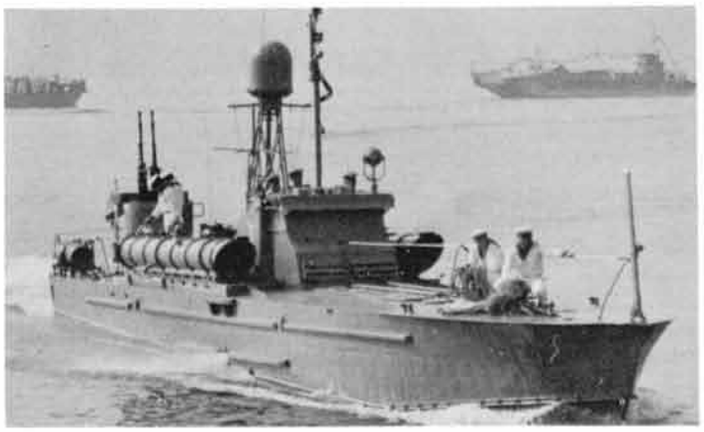
Transferred from the USSR in 1970.

Radar: Search: Pot Drum.
Fire control: Drum Tilt.
IFF: High Pole A and Square Head.

4 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·7 mm
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 shafts; 2 400 bhp = 50 knots
Range, miles: 400 at 30 knots
Complement: 12

Transferred from the USSR in 1956. Probably soon to be deleted.



"P 4" Class *1978*

MINE WARFARE FORCES

2 Ex-SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

48 49

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)*
Guns: 2—37 mm (twin); 4—12·7 mm (twins)
Mines: Can carry 20
Main engines: 2 diesels; 2 shafts; 2 200 hp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Three were transferred from the USSR in 1953—one scrapped for spares. These are the only short-hulled, low bridge, tripod mast "T43s" in existence.

Radar: Search: Ball End.
Navigation: Neptun.
IFF: Square Head, High Pole A.

"T 43" Class *1977*

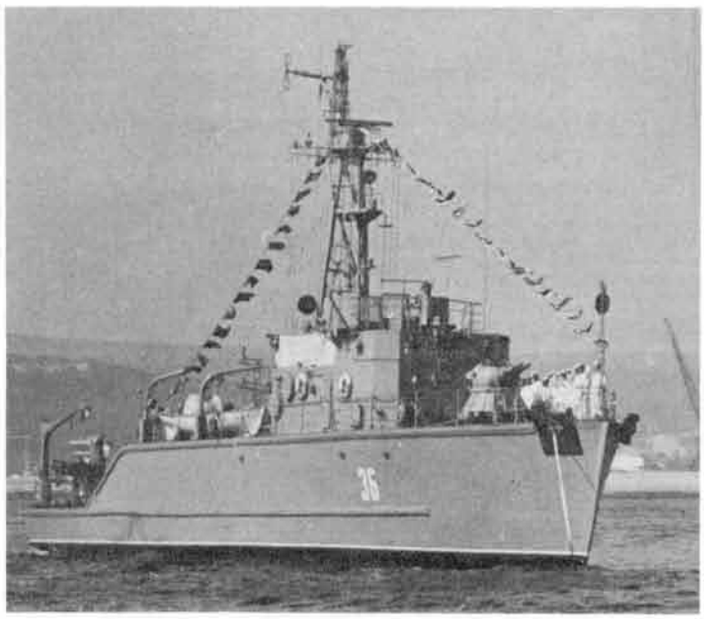
4 Ex-SOVIET "VANYA" CLASS (MINESWEEPERS—COASTAL)

36 37 38 39

Displacement, tons: 200 standard; 245 full load
Dimensions, feet (metres): 131·2 × 23·9 × 5·9 *(40 × 7·3 × 1·8)*
Guns: 2—30 mm (twin)
Mines: Can carry 5
Main engines: 2 diesels; 2 200 bhp = 18 knots
Complement: 30

Transferred from the USSR—two in 1970 and two in 1971. Can act as minehunters.

Radar: Don 2.



"VANYA" Class *1977*

4 Ex-SOVIET "YEVGENYA" CLASS (MINESWEEPERS—INSHORE)

Displacement, tons: 70 standard; 80 full load
Dimensions, feet (metres): 79 × 16·4 × 3·9 *(24·1 × 5 × 1·2)*
Guns: 2—14·5 mm
Main engine: 1 diesel; 1 200 hp = 12 knots
Range, miles: 1 000 at 9 knots
Complement: 10

GRP hulls. Transferred 1977.

Radar: Navigation: Don 2.
IFF: High Pole.

"YEVGENYA" Class

12 "PO 2" CLASS (MSB)

Built in Bulgaria—first units completed in early 1950s and last in early 1960s. Originally a class of 24—some reports suggest there may be only four remaining.

AMPHIBIOUS FORCES

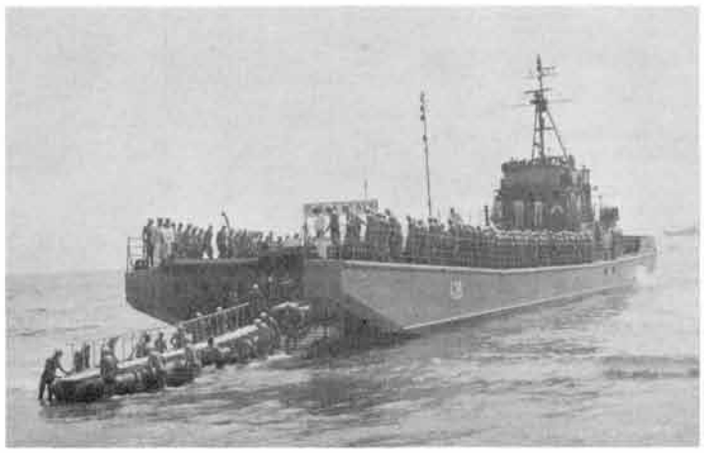
18 Ex-SOVIET "VYDRA" CLASS

420-429 + 8

Displacement, tons: 425 standard; 600 full load
Dimensions, feet (metres): 179·7 × 26·6 × 6·6 *(54·8 × 8·1 × 2)*
Main engines: 2 diesels; 2 shafts; 800 hp = 11 knots

Ten transferred from the USSR in 1970 and eight in 1979.

Radar: Navigation: Spin Trough.
IFF: High Pole.



"VYDRA" Class *1974*

9 MFP D-3 TYPE

Dimensions, feet (metres): 164 × 20 × 6·6 *(50 × 6·1 × 2)*
Gun: 1—37 mm or none

Built in Bulgaria in 1954. Based on a German Second World War MFP design.

MISCELLANEOUS

1 SUPPORT TANKER

MASAR 11

Displacement, tons: 2 000
Dimensions, feet (metres): 278·8 × 41 × 11·5 *(85 × 12·5 × 3·5)*
Guns: 4—30 mm (two twins)
Main engines: Diesels

Built in Bulgaria in 1979-80. Abeam fuelling to port. Mounts 1·5 ton crane amidships.

3 COASTAL TANKERS

2 SURVEY SHIPS

VLADIMIR ZAIMOV 451 +1

"Varna" class survey ships built in Bulgaria in 1959.

1 "MOMA" CLASS (SURVEY SHIP)

617

Transferred by the USSR.

2 TRAINING SHIPS

VAPCAROV

Approx 130 ft *(39·6 m)* with clipper bow.

VAPCAROV

VESSLETZ

Auxiliary schooner with bridge amidships.

2 DEGAUSSING SHIPS

324, 441

Transferred by the USSR in 1958 and 1962.

2 SALVAGE CRAFT

1 EAST GERMAN "700" CLASS (FLEET TUG)

JUPITER 332

Of 1 800 tons and 12 knots.

JUPITER

7 COASTAL TUGS

Ten or more other auxiliaries probably including diving craft and water boats.

6 BARRACK SHIPS

2 DIVING VESSELS

BURMA

Ministerial

Minister of Defence:
General Thura Kyaw Htin

Headquarters' Appointment

Vice-Chief of Staff, Defence Services (Navy):
Rear Admiral Chit Hlaing

Diplomatic Representation

Naval, Military and Air Attaché in London:
Lieutenant-Colonel Saw Lwin

Naval, Military and Air Attaché in Washington:
Colonel Tin Aye

Bases

Bassein, Mergui, Moulmein, Rangoon, Zadet.

General

The interest in off-shore patrol has resulted in a long overdue replacement programme.

Personnel

(a) 1981: 10 000 including 800 marines
(b) Voluntary service

Aircraft

The Air Force operates a number of Alouette III, Husky and Sioux helicopters which work with the navy when needed.

Strength of the Fleet

Type	*Active*	*Building*
Frigate	1	—
Corvettes	4	—
Coastal Patrol Craft	6	2
River Patrol Craft	41	—
Gunboats	30	—
Survey Vessels	2	—
Auxiliaries	10	—
Offshore Patrol Vessels	1	2
Coastal Patrol Vessels	3	—
Inshore Patrol Vessels	6	—

Mercantile Marine

Lloyd's Register of Shipping:
90 vessels of 87 519 tons gross

DELETIONS

Frigate

1979 *Mayu*

Light Forces

1975 T201-205—Saunders-Roe convertibles

Gunboat

1976 *Indaw* sold commercially

FRIGATE

1 Ex-BRITISH "ALGERINE" CLASS

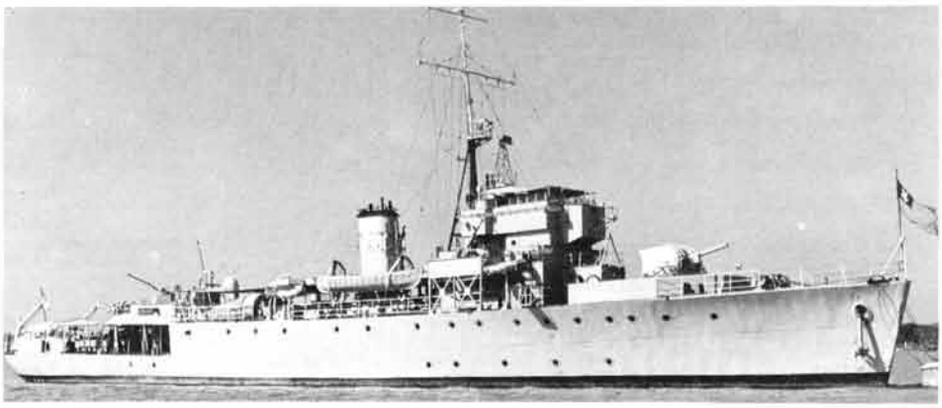
Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
YAN MYO AUNG (ex-HMS *Mariner*, ex-*Kincardine*)	—	Port Arthur Shipyards, Canada	26 Aug 1943	9 May 1944	23 May 1945

Displacement, tons: 1 040 standard; 1 335 full load
Dimensions, feet (metres): 235 × 35·5 × 11·5 *(71·6 × 10·8 × 3·5)*
Guns: 1—4 in *(102 mm)*; 4—40 mm
Main engines: Triple expansion; 2 000 ihp; 2 shafts
Boilers: Two 3-drum type
Speed, knots: 16·5
Range, miles: 4 000 at 12 knots
Complement: 140

Former ocean minesweeper in the Royal Navy, used as escort vessel. Handed over to Burma in London and renamed *Yan Myo Aung* on 18 April 1958. Fitted for minelaying and can carry 16 mines, eight on each side.

Radar: Decca Type 202.

Sonar: British Type 144.



YAN MYO AUNG *1964, Burmese Navy*

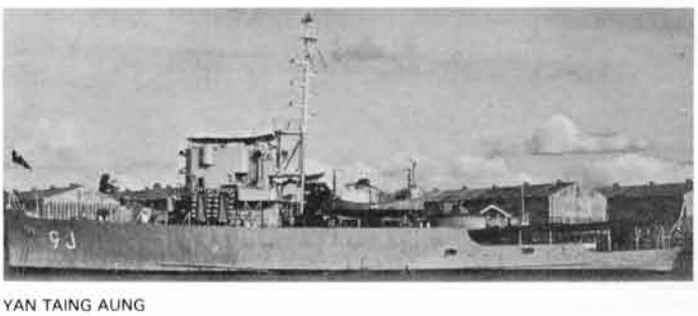
CORVETTES

1 Ex-US "PCE 827" CLASS

Name	*No.*	*Builders*	*Commissioned*
YAN TAING AUNG (ex-USS *Farmington* PCE 894)	PCE 41	Willamette Iron & Steel Co, Portland, Oregon	10 Aug 1943

Displacement, tons: 640 standard; 903 full load
Dimensions, feet (metres): 184 × 33 × 9·5 *(56 × 10·1 × 2·9)*
Guns: 1—3 in/50; 2—40 mm (1 twin); 8—20 mm (4 twin)
A/S weapons: 1 Hedgehog; 2 DCTs; 2 DC racks
Main engines: General Motors diesels; 2 shafts; 1 800 bhp = 15 knots

Laid down on 7 December 1942 and launched on 15 May 1943. Transferred on 18 June 1965.



YAN TAING AUNG

1 Ex-US "ADMIRABLE" CLASS

Name	*No.*	*Builders*	*Commissioned*
YAN GYI AUNG (ex-USS *Creddock* MSF 356)	PCE 42	Willamette Iron & Steel Co, Portland, Oregon	1944

Displacement, tons: 650 standard; 945 full load
Dimensions, feet (metres): 184·5 × 33 × 9·8 *(56·2 × 10·1 × 3)*
Guns: 1—3 in/50 single fwd; 4—40 mm (2 twin); 4—20 mm (2 twin)
A/S weapons: 1 US Hedgehog; 2 DCTs; 2 DC Racks
Main engines: Diesels; 2 shafts; 1 710 shp = 14·8 knots
Range, miles: 4 300 at 10 knots

Laid down on 10 November 1943 and launched on 22 July 1944.
Transferred at San Diego on 31 March 1967. Minesweeping gear removed.

2 "NAWARAT" CLASS

Name	*No.*	*Builders*	*Commissioned*
NAGAKYAY	—	Government Dockyard, Dawbon, Rangoon	3 Dec 1960
NAWARAT	—	Government Dockyard, Dawbon, Rangoon	26 Apr 1960

Displacement, tons: 400 standard; 450 full load
Dimensions, feet (metres): 163 × 26·8 × 5·8 *(49·7 × 8·2 × 1·8)*
Guns: 2—25 pdr QF; 2—40 mm
Main engines: 2 Paxman-Ricardo turbo-charged diesels; 2 shafts; 1 160 bhp = 12 knots
Complement: 43

NAWARAT

LIGHT FORCES

6 RIVER PATROL CRAFT

PBR 211-216

Displacement, tons: 8
Dimensions, feet (metres): 32 × 11 × 2·6 *(9·8 × 3·4 × 0·8)*
Guns: 2—50 MGs (twin, fwd); 1—7·9 mm LMG (aft)
Main engines: 2 geared General Motors diesels, water jets = 25+ knots
Complement: 4 or 5

Acquired in 1978.

10 BURMESE-BUILT RIVER PATROL CRAFT

Small craft, 50 ft long, built in Burma in 1951-52.

2 PGM TYPE (COASTAL PATROL CRAFT)

Length, feet (metres): 110 *(33·5)*

Under construction in Burma Naval Dockyard.

25 YUGOSLAV-BUILT RIVER PATROL CRAFT

Small craft, 52 ft long, acquired from Yugoslavia in 1965.

GUNBOATS

3 Ex-BRITISH LCG (M) TYPE

INLAY **INMA** **INYA**

Displacement, tons: 381
Dimensions, feet (metres): 154 × 22·5 × 7·8 *(46·9 × 6·9 × 2·4)*
Guns: 2—25 pdr; 2—2 pdr
Main engines: Paxman Ricardo diesels; 2 shafts; 1 000 bhp = 13 knots
Complement: 39

Former British landing craft, gun (medium) LCG (M). Employed as gunboats.

Radar: British Type 974.

2 IMPROVED "Y 301" CLASS

Y 311 **Y 312**

Guns: 2—40 mm (single); 4—20 mm (single).

Dimensions approximately as "Y 301" class. Built in Burma 1969.

10 "Y 301" CLASS

Y 301 **Y 302** **Y 303** **Y 304** **Y 305** **Y 306** **Y 307** **Y 308** **Y 309** **Y 310**

Displacement, tons: 120
Dimensions, feet (metres): 104·8 × 24 × 3 *(32 × 7·3 × 0·9)*
Guns: 2—40 mm; 1—2 pdr
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 shafts; 1 000 bhp = 13 knots
Complement: 29

All ten of these boats were completed in 1958 at the Uljanik Shipyard, Pula, Yugoslavia.

6 Ex-US PGM TYPE

PGM 401 **PGM 402** **PGM 403** **PGM 404** **PGM 405** **PGM 406**

Displacement, tons: 141
Dimensions, feet (metres): 101 × 21·1 × 7·5 *(30·8 × 6·4 × 2·3)*
Guns: 2—40 mm; 2—20 mm (twin); 2—50 MGs
Main engines: 8 General Motors 6-71 diesels; 2 shafts; 2 040 bhp = 17 knots
Range, miles: 1 000 cruising
Complement: 17

Built by the Marinette Marine Corporation, USA. Ex-US PGM 43-46, 51 and 52 respectively. Machinery comprises 2-stroke, 6-cyl, tandem geared twin diesel propulsion unit—1 LH and 1 RH.

Radar: Raytheon 1 500 in PGM 405-6; EDO 320 in PGM 401-4.

8 GUNBOATS (Ex-TRANSPORTS)

SABAN **SEINDA** **SETYAHAT** **SHWETHIDA**
SAGU **SETKAYA** **SHWEPAZUN** **SINMIN**

Displacement, tons: 98
Dimensions, feet (metres): 94·5 × 22 × 4·5 *(28·8 × 6·7 × 1·4)*
Guns: 1—40 mm, 3—20 mm
Main engine: Crossley ERL—6 diesel; 160 bhp = 12 knots
Complement: 32

7 Ex-US CGC TYPE

MGB 101 **MGB 102** **MGB 104** **MGB 105** **MGB 106** **MGB 108** **MGB 110**

Displacement, tons: 49 standard; 66 full load
Dimensions, feet (metres): 83 × 16 × 5·5 *(25·3 × 4·9 × 1·7)*
Guns: 1—40 mm; 1—20 mm
Main engines: 4 General Motors diesels; 2 shafts; 800 bhp = 11 knots
Complement: 16

Ex-USCG 83-ft type cutters with new hulls built in Burma. Completed in 1960. Three of this class are reported to have been sunk.

MGB 110

SURVEY VESSELS

1 OCEAN SURVEY SHIP

Name	*No.*	*Builders*	*Commissioned*
THU TAY THI	—	Brodogradiliste "Tito", Belgrade, Yugoslavia	1965

Displacement, tons: 1 059
Length, feet (metres): 204 *(62·2)*
Complement: 99

Fitted with helicopter platform.

THU TAY THI

1 COASTAL SURVEY SHIP

Name	*No.*	*Builders*	*Commissioned*
YAY BO	UBHL 807	Netherlands	1957

Displacement, tons: 108
Complement: 25

FISHERY PROTECTION VESSELS

(under People's Pearl and Fishery Department)

1 + 1 + 1 "OSPREY" CLASS (OFFSHORE PATROL)

IN DAW + 2

Displacement, tons: 325 light; 480 full load
Dimensions, feet (metres): 164 × 34·5 × 9 *(50 × 10·5 × 2·8)*
Guns: 1—40 mm; 2 MGs
Main engines: 2 Burmeister and Wain Alpha diesels; 2 320 hp = 20 knots
Complement: 20 (5 officers, 15 ratings)

In Daw completed 30 May 1980 by Frederikshavn Dockyard, Denmark, second building, third on order. Operated by Burmese Navy for the People's Pearl and Fishery Department. *In Daw* in her first six months achieved a very considerable success in operations against pirates, smugglers and illegal fishers. Has a helicopter deck.

Boarding boat: David Still craft capable of 25 knots.

IN DAW (on trials) *6/1980*

3 SWIFT TYPE PGM (COASTAL PATROL)

PGM 421 422 423

Displacement, tons: 96
Dimensions, feet (metres): 105·8 × 23·8 × 6·9 *(32·3 × 7·2 × 3·1)*
Guns: 2—40 mm; 2—20 mm; 2—50 MGs
Main engines: 2 MTU 12V 331 TC81 diesels; 2 shafts = 27 knots
Range, miles: 1 800 cruising
Complement: 25

6 "CARPENTARIA" CLASS (INSHORE PATROL)

01-06

Displacement, tonnes: 26 full load
Dimensions, feet (metres): 51·5 × 15·7 × 4·3 *(15·7 × 4·8 × 1·3)*
Guns: 2—20 mm; LMG
Main engines: 2 diesels; 1 300 hp = 25 knots
Range, miles: 950 at 18 knots
Complement: 10

Built by De Havilland Marine, Sydney. First two delivered 1979, remainder in 1980.

Burmese "CARPENTARIA" Class *1979, Graeme Andrews*

SUPPORT SHIP

YAN LON AUNG

Light forces support diving ship of 520 tons, acquired from Japan in 1967.

YAN LON AUNG

TRANSPORTS

8 Ex-US LCM 3 TYPE

LCM 701 LCM 702 LCM 703 LCM 704 LCM 705 LCM 706 LCM 707 LCM 708

Displacement, tons: 52 tons full load
Dimensions, feet (metres): 50 × 14 × 4 *(15·2 × 4·3 × 1·2)*
Guns: 2—20 mm single
Main engines: 2 Gray Marine diesels; 450 bhp = 9 knots

US-built LCM type landing craft. Used as local transports for stores and personnel. Cargo capacity 30 tons.

1 Ex-US LCU TYPE

AIYAR LULIN 603

Displacement, tons: 200 light; 342 full load
Dimensions, feet (metres): 135·2 × 29 × 5·5 *(41·2 × 8·8 × 1·7)*
Main engines: 4 General Motors 12007 T diesels; 2 shafts (Kort nozzles); 1 000 bhp = 11 knots

US type utility landing craft completed in Rangoon 1966. Used as transport. Cargo capacity 168 tons.

CAMEROON

Ministerial

Minister of Armed Forces:
Daoudou Sadou

Senior Officer:
Capitaine de Corvette N'dangang

Personnel

1981: 600 officers and men

DELETIONS

1975 French VC Type—*Vigilant* (ex-VC 6), *Audacieux* (ex VC-8)

Base

Douala (a new base is to be built by Messrs Continental, Illinois Ltd at a cost of $9 million)

Mercantile Marine

Lloyd's Register of Shipping:
44 vessels of 62 080 tons gross

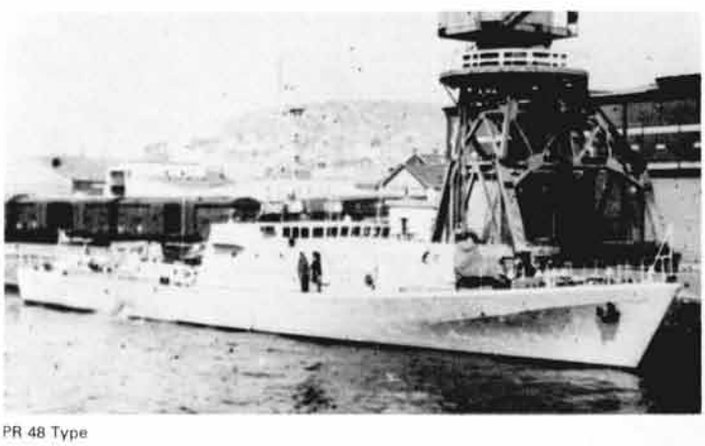
LIGHT FORCES

1 PR 48 TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
L'AUDACIEUX	—	Soc Français de Construction Naval	11 May 1976

Displacement, tons: 250 full load
Dimensions, feet (metres): 155·8 × 23·3 × 7·5 *(47·5 × 7·1 × 2·3)*
Missiles: Fitted for 8 SS-12
Guns: 2—40 mm
Main engines: 2 MGO diesels; 4 200 hp = 23 knots
Range, miles: 2 000 at 16 knots
Complement: 25

Ordered in September 1974. Laid down on 10 February 1975, launched on 31 October 1975. Similar to "Bizerte" class in Tunisia.



PR 48 Type

2 Ex-CHINESE "SHANGHAI" CLASS (FAST ATTACK CRAFT—GUN)

101 **102**

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twins); 4—25 mm (twins)
A/S weapons: 8 DCs
Minerails: Can be fitted for up to 10 mines
Main engines: 4 diesels; 4 800 bhp = 30 knots
Complement: 25

Transferred July 1976.

Radar: Skin Head.

Name	*No.*	*Builders*	*Commissioned*
QUARTIER MAÎTRE ALFRED MOTTO	—	At. et Ch. de l'Afrique Equatoriale Libreville, Gabon	1974

Displacement, tons: 96
Dimensions, feet (metres): 95·4 × 20·3 × 6·3 *(29·1 × 6·2 × 1·9)*
Guns: 2—20 mm; 2 MGs
Main engines: 2 Baudoin diesels; 1 290 bhp = 15·5 knots
Complement: 17

Name	*No.*	*Builders*	*Commissioned*
LE VALEUREUX	—	Ch. Navals de l'Esterel	1970

Displacement, tons: 45 full load
Dimensions, feet (metres): 88 × 16·3 × 5·1 *(26·8 × 5 × 1·5)*
Gun: 1—20 mm
Main engines: 2 General Motors diesels; 2 shafts; 960 hp = 25 knots
Complement: 11

Name	No.	Builders	Commissioned
BRIGADIER M'BONGA TOUNDA	—	Ch. Navals de l'Esterel	1967

Displacement, tons: 20 full load
Dimensions, feet (metres): 59·7 × 13·5 × 4 *(18·2 × 4·1 × 1·2)*
Gun: 1—12·7 mm MG
Main engines: 2 Caterpillar diesels; 2 shafts; 540 bhp = 22·5 knots
Complement: 8

Customs duties. Sister of Mauritanian *Im Raq Ni.*

6 COASTAL PATROL CRAFT

First three (Type 800) delivered August 1977 by Chantiers Plascoa, Cannes, second three (Type 650) in 1979. For Customs duties.

MISCELLANEOUS

1 FAIREY MARINE "INTERCEPTOR" CLASS

25 ft *(7·6 m)* craft with catamaran hull. Can carry a platoon of soldiers or eight life-rafts. Twin 135 hp outboard motors = 30 knots. Delivered on 1 December 1976.

2 HARBOUR LAUNCHES

SANAGA **BIMBIA**

Of 10 tons.

1 LCM

BAKASI

Built by Carena, Abidjan, Ivory Coast. Of 57 tons and 56 ft long. Speed 9 knots on two Baudoin diesels.

5 LCVP

INDÉPENDANCE **REUNIFICATION** **SOUELLABA** **MACHTIGAL** **MANOKA**

Built by Ateliers et Chantiers de l'Afrique Equatoriale, Libreville, Gabon except *Souellaba* at A.C.R.E., Libreville, Gabon. Of 11 tons and 10 knots.

6 ROTORK FAC 408 CRAFT

Two ton fast assault craft delivered in 1978 by Rotork Marine Ltd, Poole, England.

AUXILIARIES

Tornade and *Ouragan*—built in 1966. *St. Sylvestre*—built in 1967.
Four small outboard craft.
Mungo operated by Transport Ministry. *Dr. Jamot* operated by Health Ministry.

CANADA
NAVY

Ministerial

Minister of National Defense:
Hon J. Gilles Lamontagne

Headquarters' Appointments

Chief of Defense Staff:
General R. M. Withers, CMM, CD
Chief of Maritime Doctrine and Operations:
Rear-Admiral N. D. Brodeur, CD
Director General Maritime Doctrine and Operations:
Commodore J. C. Wood, CD

Senior Appointments

Commander, Maritime Command:
Vice-Admiral J. A. Fulton, CMM, CD
Commander, Maritime Forces, Pacific:
Rear-Admiral W. A. Hughes, CD

Diplomatic Representation

Naval Adviser London:
Captain (N) J. H. W. Knox, CD
Canadian Forces Attaché and Maritime Liaison Officer, Washington:
Commodore E. R. Ross, CD
Canadian Forces Attaché (Naval) Moscow:
Commander (N) E. A. Makin, CD

Personnel

(a) 1979: 19 593 total (8 933 regular force; 3 250 reserve; 7 410 civilians)
(b) Voluntary service

Defence Estimates (Naval)

1978-79: $629 000 000
1979-80: $649 000 000

Note: Canada no longer accounts for separate services in a unified command.

Bases

Halifax and Esquimalt

Fleet Deployment

Atlantic:
1st Destroyer Squadron (2 "Iroquois", 4 St Laurent" classes)
5th Destroyer Squadron (2 "Iroquois", 2 "St Laurent" and 2 "Annapolis" classes)
3 "Oberon" class submarines.
Protecteur, Preserver
Pacific:
2nd Destroyer Squadron (4 "Improved Restigouche" class)
Provider
Training Reserve:
4 "Mackenzie" class (to be modernised), *St Croix*

Air Arm

In an integrated force there is no specific Fleet Air Arm, but two squadrons of Sea King helicopters provide for ships' needs. The Argus maritime patrol aircraft are being replaced by 18 Auroras, a special Canadian version of the Lockheed P-3C Orion.

Prefix to Ships' Names

HMCS

Establishment

The Royal Canadian Navy (RCN) was officially established on 4 May 1910, when Royal Assent was given to the Naval Service Act. On 1 February 1968 the Canadian Forces Reorganisation Act unified the three branches of the Canadian Forces and the title "Royal Canadian Navy" was dropped.

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Patrol Submarines	3	—
Destroyers (DDH)	4	—
Frigates (some with helicopters)	16	— (6)
Replenishment Ships	3	—
Maintenance Ship	1	—
Small Tankers	2	—
Patrol Escorts (Small)	7	—
Patrol Craft	6	—
Research Ships	4	—
Diving Support Ship and Tenders	3	—
Gate Vessels	5	—
Training Ships	6	—
Tugs: Ocean	2	—
Harbour	17	—
Auxiliaries	3	—

RCMP

This force has now discontinued the use of its previously considerable number of craft. Some transferred to DND in 1975-76.

Reserve (Category C)

Frigates

1974 *Columbia, Chaudiere*

Hydrofoil

1971 *Bras D'Or*

Mercantile Marine

Lloyd's Register of Shipping:
1 324 vessels of 3 180 126 tons gross

DELETIONS

Submarine

1976 *Rainbow* broken up at Esquimalt

Frigates

1974 *Granby*
1975 *St. Laurent* sold for break-up 27 Sep 1979 (sank on tow 12 Jan 1980)

Maintenance Ship

1977 *Cape Scott* sold for scrap

Research Vessels

1976 *Kapuskasing*—sunk as target 3 Oct 1978
1977 *Laymore* on sales list

Tugs

1975 *Glendyne* sunk for diver training, *Heatherton* transferred to DPW (Canada)
1976 *Clifton, Glenbrook, Glenlivet, Mannville, Parksville* (Old), *Merrickville* (Old)
1978 *Cree* (Crown Assets)
1979 *Riverton, Eastwood* (Crown Assets)

PENNANT LIST

Submarines

72	Ojibwa
73	Onondaga
74	Okanagan

Destroyers

280	Iroquois
281	Huron
282	Athabaskan
283	Algonquin

Frigates

206	Saguenay
207	Skeena
229	Ottawa
230	Margaree
233	Fraser
234	Assiniboine
235	**Chaudiere
236	Gatineau
256	**St. Croix
257	Restigouche
258	Kootenay
259	Terra Nova
260	**Columbia
261	Mackenzie
262	Saskatchewan
263	Yukon
264	Qu'Appelle
265	Annapolis
266	Nipigon

*Category C Reserve 1971.

**Category C Reserve 1974.

Replenishment and Maintenance Ships

100	Cape Breton
AOR 508	Provider
AOR 509	Protecteur
AOR 510	Preserver
AOTL 501	Dundalk
AOTL 502	Dundurn

Research Vessels

AGOR 113	Sackville
AGOR 114	Bluethroat
AGOR 171	Endeavour
AGOR 172	Quest

Diving Support Ship

ASXL 20	Cormorant

Patrol Escorts

PB 140	Fort Steele
PB 159	Fundy
PB 160	Chignecto
PB 161	Thunder
PB 162	Cowichan
PB 163	Miramichi
PB 164	Chaleur
PH 400	*Bras d'Or

Gate Vessels

180	Porte St. Jean
183	Porte St. Louis
184	Porte de la Reine
185	Porte Quebec
186	Porte Dauphine

Patrol Craft (ex-RCMP)

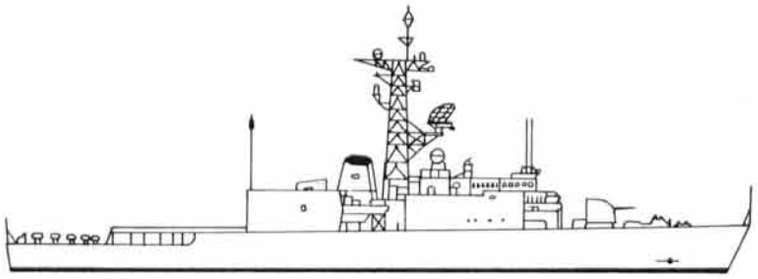
PB 191	Adversus
PB 192	Detector
PB 193	Captor
PB 194	Acadian
PB 195	Nicholson
PB 196	Sidney

Tugs

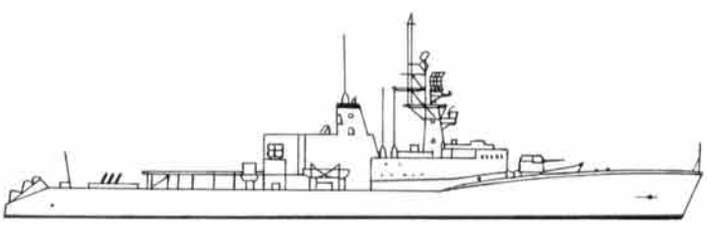
ATA 531	St. Anthony
ATA 533	St. Charles
ATA 640	Glendyne
ATA 641	Glendale
ATA 642	Glenevis
ATA 643	Glenbrook
ATA 644	Glenside
YTL 553	Wildwood
YTL 582	Burrard
YTL 583	Beamsville
YTL 586	Queensville
YTL 587	Plainsville
YTL 588	Youville
YTL 589	Loganville
YTL 590	Lawrenceville
YTL 591	Parksville
YTL 592	Listerville
YTL 593	Merrickville
YTL 594	Marysville

TRVs

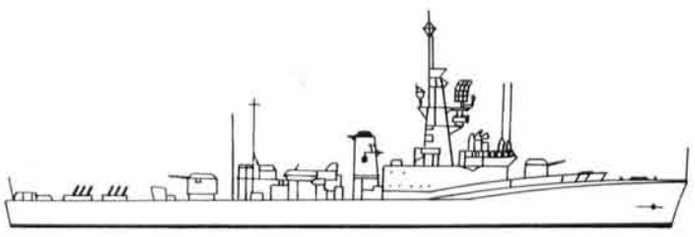
YPT 1	Songhee
YPT 120	Nimpkish



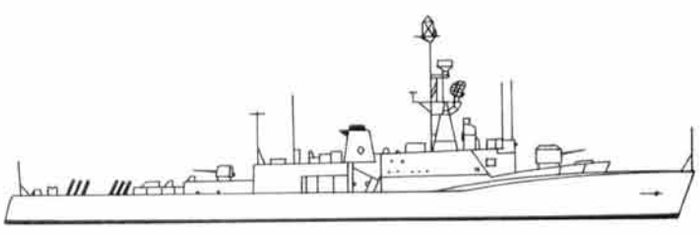
"DD 280" Class



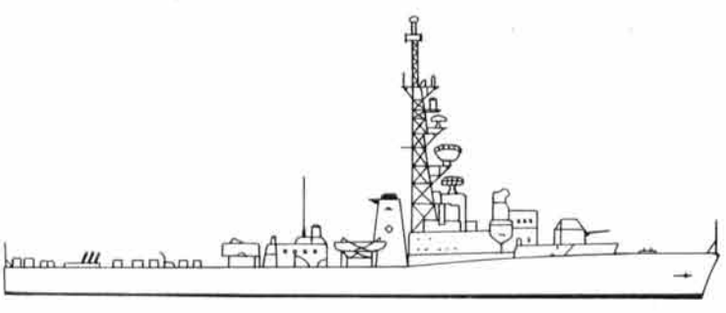
"ANNAPOLIS" Class



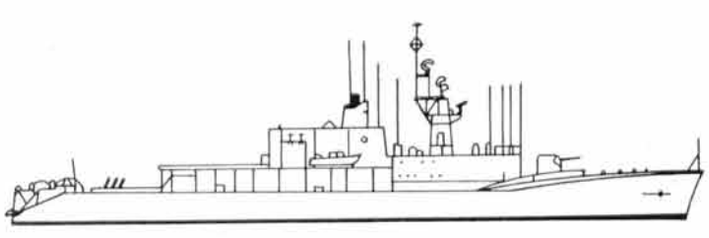
"MACKENZIE" Class



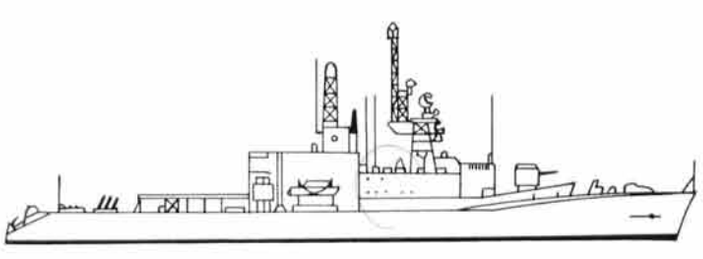
"RESTIGOUCHE" Class



"IMPROVED RESTIGOUCHE" Class



"ST. LAURENT" Class (except FRASER)



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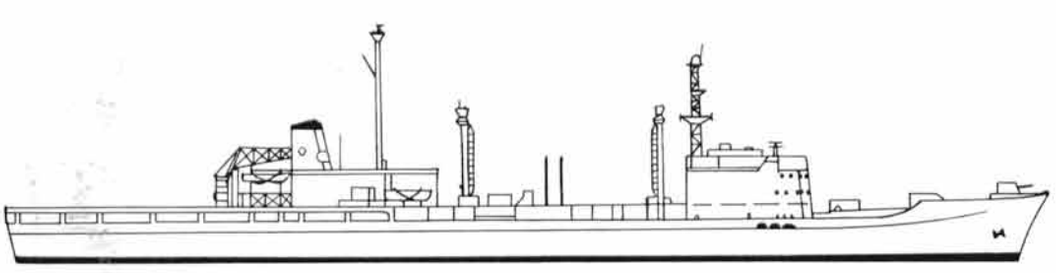
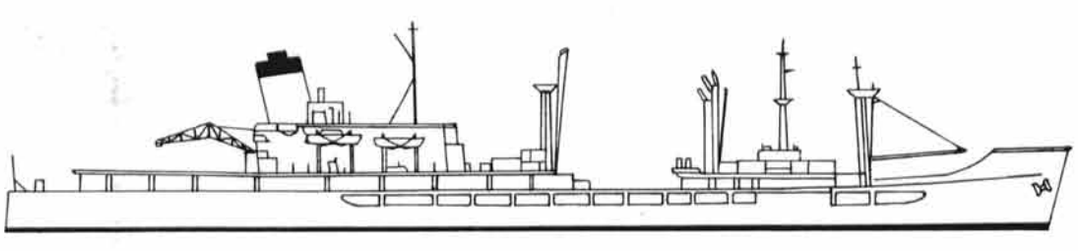


PROTECTEUR, PRESERVEP



PROVIDER

SUBMARINES

3 "OBERON" CLASS (PATROL SUBMARINES)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
OJIBWA (ex-*Onyx*)	72	HM Dockyard, Chatham	27 Sep 1962	29 Feb 1964	23 Sep 1965
ONONDAGA	73	HM Dockyard, Chatham	18 June 1964	25 Sep 1965	22 June 1967
OKANAGAN	74	HM Dockyard, Chatham	25 Mar 1965	17 Sep 1966	22 June 1968

Displacement, tons: 2 200 surfaced; 2 420 dived
Dimensions, feet (metres): 295·2 × 26·5 × 18 *(90 × 8·1 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)*, 6 bow and 2 stern
Main machinery: 2 Admiralty Standard Range diesels; 3 680 bhp; 2 shafts; 2 electric motors; 6 000 hp
Speed, knots: 12 surfaced; 17 dived
Range, miles: 9 000 surfaced
Complement: 65 (7 officers, 58 ratings)

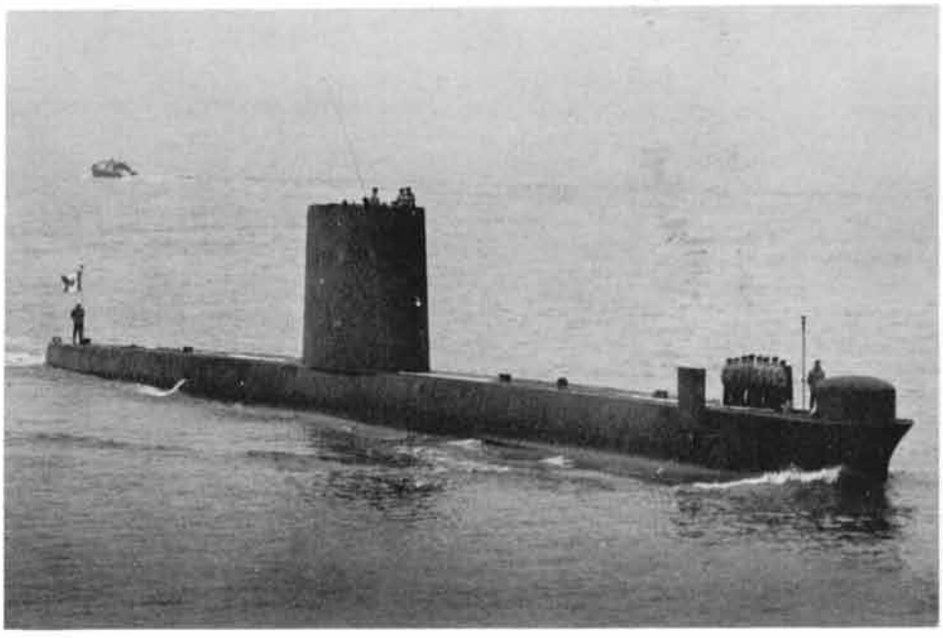
In 1962 the Ministry of National Defence announced that Canada was to buy three "Oberon" class submarines in the UK. The first of these patrol submarines was obtained by the Canadian Government from the Royal Navy construction programme. She was laid down as *Onyx* but launched as *Ojibwa*. The other two were specific Canadian orders. There were some design changes to meet specific new needs including installation of RCN communications equipment and increase of air-conditioning capacity to meet the wide extremes of climate encountered in Canadian operating areas.

Modernisation: All to undergo SOUP (Submarine Operational Update Project) with more modern sonar and fire control; *Ojibwa* 1980-82, other two 1982-84 and 1984-86.

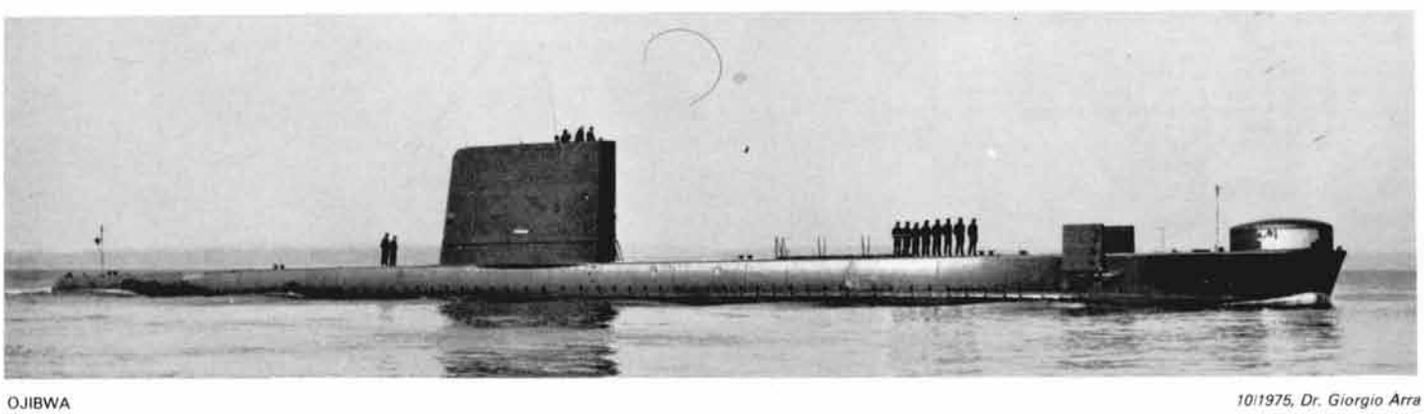
Radar: Type 1006.

Sonar: Attack: Type 187.
Intercept: Type 197.
Torpedo warning: Type 719
Long range passive search: Type 2007.

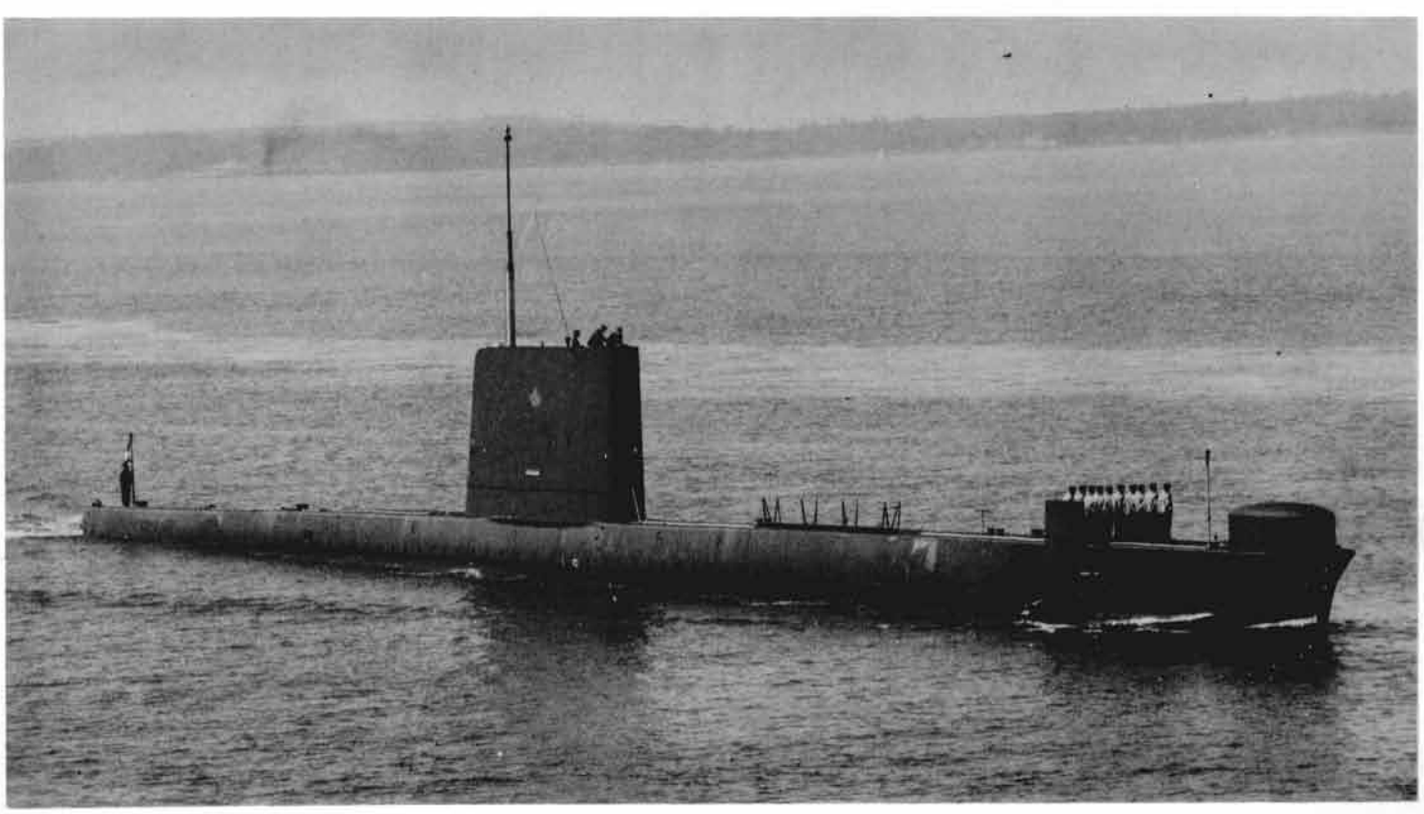
Torpedoes: Carry Mk 37C ASW torpedoes.



OJIBWA *5/1978, Wright and Logan*



OJIBWA *10/1975, Dr. Giorgio Arra*



OKANAGAN *1976, Michael D. J. Lennon*

DESTROYERS

NEW CONSTRUCTION

Early in 1978 $63 million was approved for a project definition of this new class to replace the "St. Laurent" class and in August 1978 tenders were invited. The very basic requirements for this new class were that it should be of 3 500-4 200 tons, capable of carrying one helicopter of the Sea King variety, using a towed array and should have a SSM capability and a better SAM capability than "DD 280". The last suggests that these ships may need additional SAM armament for, at least, their duties in STANAVFORLANT. By June 1980 five designs—Genstar Marine (Type 24 variant), Melara Club (stretched "Maestrale" class), Pratt and Whitney ("Standard" frigate variant), St. John S.B. and D.D. Co. Sperry (FFG 7 variant), Cantec Marine (Litton US design)—had been submitted. The final decision is to be made between the last two of these, the choice having been announced on 8 December 1980. Contracts for definition studies are expected to be given in April 1981. After that a year of studies is likely before the final choice is made for the $2·3 billion order for six ships.

4 "DD 280" CLASS (DDH)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
IROQUOIS	280	Marine Industries Ltd, Sorel	15 Jan 1969	28 Nov 1970	29 July 1972
HURON	281	Marine Industries Ltd, Sorel	15 Jan 1969	3 Apr 1971	16 Dec 1972
ATHABASKAN	282	Davie S.B. Co, Lauzon	1 June 1969	27 Nov 1970	30 Nov 1972
ALGONQUIN	283	Davie S.B. Co, Lauzon	1 Sep 1969	23 Apr 1971	30 Sep 1973

Displacement, tons: 4 700 full load
Dimensions, feet (metres): 398 wl; 426 oa × 50 × 15·5 keel/21·5 screws
(121·4;129·8 × 15·2 × 4·7/6·6)
Aircraft: 2 Sea King CHSS-2 A/S helicopters
Missiles: SAM; Sea Sparrow, 2 quad launchers (see note)
Gun: 1—5 in *(127 mm)*/54 OTO-Melara Compact
A/S weapons: 1 Mk NG10 Limbo; 2 triple Mk 32 torpedo tubes
Main engines: Gas turbine; 2 Pratt & Whitney FT4A2; 50 000 shp; 2 Pratt & Whitney FT12AH3; 7 400 shp for cruising; 2 shafts
Speed, knots: 29 +
Range, miles: 4 500 at 20 knots
Complement: 245 (20 officers, 225 men) plus air unit, (7 officers + 33 men)

These ships have the same hull design, dimensions and basic characteristics as the large general purpose frigates cancelled at the end of 1963 (see particulars and illustration in the 1963-64 edition). Designed as anti-submarine ships, they are fitted with variable depth and hull sonar, landing deck equipped with double hauldown and Beartrap, flume type anti-rolling tanks to stabilise the ships at low speed, pre-wetting system to counter radio-active fallout, enclosed citadel, and bridge control of machinery.

Engineering: The gas turbines feed through a Swiss Maag double reduction gearbox to two five-bladed cp propellers 13·8 ft diameter. Average miles steamed per year, 31 000. Three 750 kW gas turbine generators.

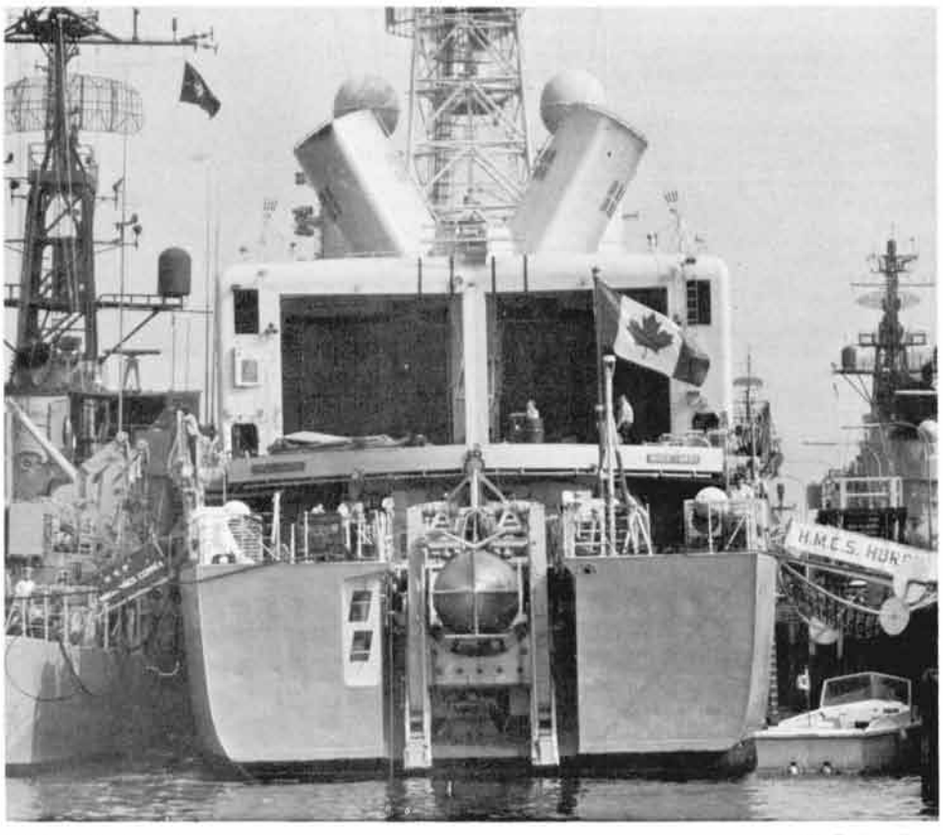
Electronics: Mk 22 Weapon System Control by Hollandse Signaal. CCS 280 by Litton. TACAN; URN 20.

Missiles: Launch system (GMLS) by Raytheon for Mk III Sea Sparrow missiles. Two quadruple launchers in forward end of the superstructure, retracting into deck-house with 32 missiles.

Radar: Surface warning and navigation: SPQ 2D (SMA).
Long range warning: LW-03 antenna—SPS 501.
Fire control: M 22.

Sonar: Hull-mounted: SQS 505 in 14 ft dome.
VDS: SQS 505, 18 ft towed body aft.
Bottomed target classification: SQS 501.

Torpedoes: The Mk 32 tubes are used with Mk 46 torpedoes.



HURON (SQS 505 VDS) *6/1978, Gerhard Koop*

IROQUOIS *6/1978, C. and S. Taylor*

FRIGATES

2 "ANNAPOLIS" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ANNAPOLIS	265	Halifax Shipyards Ltd, Halifax	July 1960	27 Apr 1963	19 Dec 1964
NIPIGON	266	Marine Industries Ltd, Sorel	Apr 1960	10 Dec 1961	30 May 1964

Displacement, tons: 2 400 standard; 3 000 full load
Dimensions, feet (metres): 371 × 42 × 14·4
(113·1 × 12·8 × 4·4)
Aircraft: 1 CHSS-2 Sea King helicopter
Guns: 2—3 in *(76 mm)*/50 US Mk 33 (twin)
A/S weapons: 1 Mk 10 Limbo in after well;
6 (2 triple) Mk 32 A/S torpedo tubes
Main engines: Geared turbines; 2 shafts; 30 000 shp
Boilers: 2 water tube
Speed, knots: 28 (30 on trials)
Range, miles: 4 570 at 14 knots
Complement: 210 (11 officers, 199 ratings)

These two ships represented the logical development of the original "St. Laurent" class, through the "Restigouche" and "Mackenzie" designs. Due to the erection of a helicopter hangar and flight deck, and variable depth sonar only one Limbo mounting could be installed. Also the 50 calibre 3-in mounting had to be moved forward to replace the 70 calibre mounting in the original design.

Classification: Officially classified as DDH.

Construction: As these are largely prefabricated no firm laying down date is officially given. Work on hull units started under cover long before components were laid on the slip.

Electronics: Tacan (URN-22) aerial fitted above funnel.
CCS-280 data system by Litton.

Radar: Search: SPS 12.
Tactical: SPS 10.
Fire control: SPG 48.

ANNAPOLIS *7/1980, Michael D. J. Lennon*

Refit: *Nipigon* underwent major refit 1977-78. *Annapolis* in 1978-79 at Canadian Vickers Ltd, Montreal.

Sonar: Types 501 (bottom classification), 502 (mortar control), 503 (search), 504 (VDS), SQS 10/11.

4 "MACKENZIE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MACKENZIE	261	Canadian Vickers Ltd, Montreal	15 Dec 1958	25 May 1961	6 Oct 1962
***SASKATCHEWAN**	262	Victoria Machinery (and Yarrow)	16 July 1959	1 Feb 1961	16 Feb 1963
YUKON	263	Burrard D.D. & Shipbuilding	25 Oct 1959	27 July 1961	25 May 1963
QU'APPELLE	264	Davie Shipbuilding & Repairing	14 Jan 1960	2 May 1962	14 Sep 1963

**Saskatchewan* was launched by Victoria Machinery Depot Co Ltd, but completed by Yarrows Ltd.

Displacement, tons: 2 380 standard; 2 880 full load
Dimensions, feet (metres): 366 × 42 × 13·5
(111·6 × 12·8 × 4·1)
Guns: 4—3 in *(76 mm)* (1 twin Mk 6 fwd 1 twin Mk 33 aft);
(Qu'Appelle; 2—3 in *(76 mm)*/50 (twin Mk 33))
A/S weapons: 2 Mk 10 Limbo in well aft;
side launchers for Mk 43 torpedoes
Main engines: Geared turbines; 2 shafts; 30 000 shp
Boilers: 2 water tube
Speed, knots: 28
Range, miles: 4 750 at 14 knots
Complement: 210 (11 officers, 199 ratings)

Classification: Officially classified as DD.

Fire control: GFCS Mk 69.

Modernisation: All to be modernised at Esquimalt under Delex (Destroyer Life Extension Programme)

Radar: Search: SPS 12.
Tactical: SPS 10.
Fire control: SPG 48.

SASKATCHEWAN *1980, Canadian Forces*

Sonar: 501 (bottom classification), 502 (mortar control), 503 (search), SQS 10/11.

3 "RESTIGOUCHE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CHAUDIERE	235	Halifax Shipyards Ltd	30 July 1953	13 Nov 1957	14 Nov 1959
ST. CROIX	256	Marine Industries Ltd, Sorel	15 Oct 1954	17 Nov 1957	4 Oct 1958
COLUMBIA	260	Burrard D.D. and Shipbuilding	11 June 1953	1 Nov 1956	7 Nov 1959

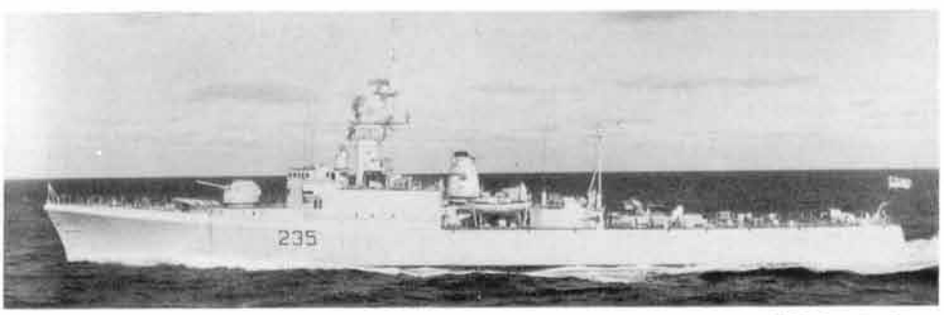
Displacement, tons: 2 370 standard; 2 880 full load
Dimensions, feet (metres): 366 × 42 × 13·5
(111·6 × 12·8 × 4·1)
Guns: 4—3 in *(76 mm)*/70, (twin Mk 6 fwd, twin Mk 33 aft)
A/S weapons: 2 Mk 10 Limbo in well aft;
side launchers for Mk 43 torpedoes
Main engines: Geared turbines; 2 shafts; 30 000 shp
Boilers: 2 water tube
Speed, knots: 28
Range, miles: 4 750 at 14 knots
Complement: 248 (12 officers, 236 ratings)

All three paid off into Category C Reserve in 1974.

Classification: Officially classified as DD.

Radar: Search: SPS 12.
Tactical: SPS 10.
Fire control: SPG 48.

Sonar: 501 (bottom classification), 502 (mortar control), 503 (search), SQS 10/11.



CHAUDIERE *1970, Canadian Forces*

4 "IMPROVED RESTIGOUCHE" CLASS

Name	*No.*
GATINEAU	236
RESTIGOUCHE	257
KOOTENAY	258
TERRA NOVA	259

Builders	*Laid down*	*Launched*	*Commissioned*
Davie Shipbuilding & Repairing	30 Apr 1953	3 June 1957	17 Feb 1959
Canadian Vickers, Montreal	15 July 1953	22 Nov 1954	7 June 1958
Burrard D.D. & Shipbuilding	21 Aug 1952	15 June 1954	7 Mar 1959
Victoria Machinery Depot Co	14 Nov 1952	21 June 1955	6 June 1959

Displacement, tons: 2 390 standard; 2 900 full load
Dimensions, feet (metres): 371 × 42 × 14·1
(113·1 × 12·8 × 4·3)
Missiles: SAM; Sea Sparrow
Guns: 2—3 in *(76 mm)*/70 (twin Mk 6)
A/S weapons: ASROC aft and 1 Mk 10 Limbo in after well
Main engines: Geared turbines; 2 shafts; 30 000 shp
Boilers: 2 water tube
Speed, knots: 28
Range, miles: 4 750 at 14 knots
Complement: 214 (13 officers, 201 ratings)

Classification: Officially classified as DD.

Conversion: These four ships were refitted with ASROC aft and lattice foremast. Work included removing the after 3-in/50 twin gun mounting and one Limbo A/S Mk 10 triple mortar, to make way for ASROC and variable depth sonar. *Terra Nova*'s refit was completed on 18 October 1968; *Gatineau* completed in 1972 and *Kootenay* and *Restigouche* in 1973. Refit also included improvements to communications fit and fitting of Sea Sparrow.

Radar: Search: SPS 12.
Tactical: SPS 10.
Fire control: SPG 48.
Navigation: Sperry Mk II.

Sonar: 501 (bottom classification), 505 (search), 505 VDS.

TERRA NOVA

2/1979, Dr Giorgio Arra

6 "ST. LAURENT" CLASS

Name	*No.*
SAGUENAY	206
SKEENA	207
OTTAWA	229
MARGAREE	230
***FRASER**	233
ASSINIBOINE	234

Builders	*Laid down*	*Launched*	*Commissioned*
Halifax Shipyards Ltd, Halifax	4 Apr 1951	30 July 1953	15 Dec 1956
Burrard Dry Dock & Shipbuilding	1 June 1951	19 Aug 1952	30 Mar 1957
Canadian Vickers Ltd, Montreal	8 June 1951	29 Apr 1953	10 Nov 1956
Halifax Shipyards Ltd, Halifax	12 Sep 1951	29 Mar 1956	5 Oct 1957
Yarrows Ltd, Esquimalt, BC	11 Dec 1951	19 Feb 1953	28 June 1957
Marine Industries Ltd, Sorel, Quebec	19 May 1952	12 Feb 1954	16 Aug 1956

**Fraser* was launched by Burrard Dry Dock & Shipbuilding but completed by Yarrows Ltd.

Displacement, tons: 2 260 standard; 3 051 full load (after conversion)
Dimensions, feet (metres): 366 × 42 × 14 (hull)
(111·6 × 12·8 × 4·3)
Aircraft: 1 CHSS-2 Sea King helicopter
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 1 Mk 10 Limbo in after well; 2 triple Mk 32 torpedo tubes for Mk 44 or 46 torpedoes
Main engines: English Electric geared turbines; 2 shafts; 30 000 shp
Boilers: 2 water tube
Speed, knots: 28
Range, miles: 4 570 at 12 knots
Complement: 213 (16 officers, 197 ratings) (plus air unit of 7 officers and 13 ratings)

The first major warships to be designed in Canada—much assistance was received from the Royal Navy (propelling machinery of British design) and the US Navy.
St. Laurent declared surplus in 1974 and disposed of in 1979.

Classification: Officially classified as DDH.

Gunnery: Original armament was four 3-in/50 (2 twin), two 40 mm (single), and two Limbo mortars.

Radar: Search: SPS 12.
Tactical: SPS 10.
Navigation: Sperry Mk II.
Fire control: SPG 48.

Reconstruction: All have helicopter platforms and VDS. Twin funnels were fitted to permit forward extension of the helicopter hangar. Fitted with fin stabilisers.
Gunhouses are of glass fibre. In providing helicopter platforms and hangars it was possible to retain only one 3-barrelled Limbo mortar and only one twin 3-in gun mounting. Two steam turbo alternators and three diesel generators; total 1 400 kWs.
Dates of recommissioning after conversion: *Assiniboine* 28 June 1963, *St. Laurent* (since deleted) 4 October 1963, *Ottawa* 21 October 1964, *Saguenay* 14 May 1965, *Skeena* 15 August 1965, *Margaree* 15 October 1965, *Fraser* 14 October 1966.
Fraser has lattice radar-mast between the funnels for Tacan aerial. All other ships have this aerial on a pole mast.

Refits: *Fraser, Ottawa* and *Skeena* underwent major refit 1977-78. Second three underwent major refit 1978-79 at Canadian Vickers Ltd, Montreal.

Sonar: 501 (bottom classification), 502 (mortar control), 503 (search), 504 (VDS).

FRASER

10/1980, Michael D. J. Lennon

ASSINIBOINE

4/1980, Michael D. J. Lennon

REPLENISHMENT SHIPS

Name	No.	Builders	Laid down	Launched	Commissioned
PROTECTEUR	AOR 509	St. John Dry Dock Co Ltd, NB	17 Oct 1967	18 July 1968	30 Aug 1969
PRESERVER	AOR 510	St. John Dry Dock Co Ltd, NB	17 Oct 1967	29 May 1969	30 July 1970

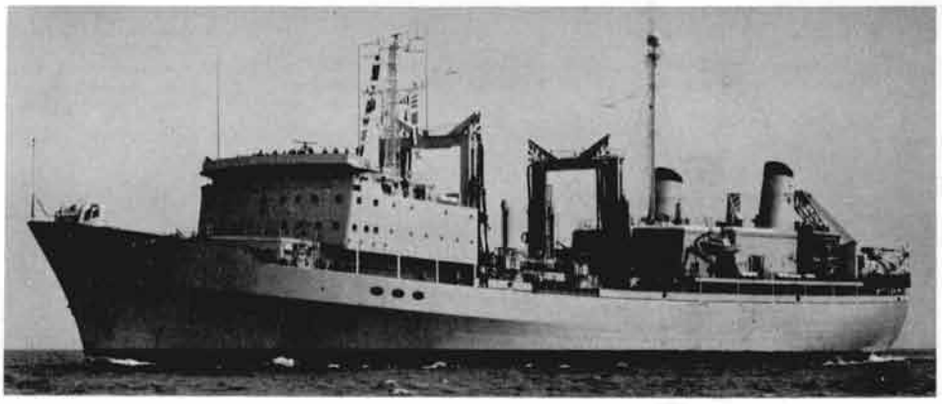
Displacement, tons: 8 380 light; 24 700 full load
Dimensions, feet (metres): 564 × 76 × 30 *(171·9 × 23·2 × 9·1)*
Aircraft: 3 CHSS-2 Sea King helicopters
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: Geared turbine; 21 000 shp; 1 shaft
Boilers: 2 forced draught water tube
Speed, knots: 21
Range, miles: 4 100 at 20, 7 500 at 11·5 knots
Complement: 290 (28 officers, 262 ratings)

Contract price $47·5 million for both ships. In design they are an improvement on that of the prototype *Provider*. They can carry spare anti-submarine helicopters, military vehicles and bulk equipment for sealift purposes. 13 100 tons FFO, 600 tons diesel, 400 tons aviation fuel, 1 048 tons dry cargo and 1 250 tons of ammunition.

Electronics: Tacan aerial.

Radar: Decca 969, Sperry Mk II.

Sonar: SQS 505.



PROTECTEUR *6/1980, Wright and Logan*

Name	No.	Builders	Laid down	Launched	Commissioned
PROVIDER	AOR 508	Davie Shipbuilding Ltd, Lauzon	1 May 1961	5 July 1962	28 Sep 1963

Displacement, tons: 7 300 light; 22 000 full load
Dimensions, feet (metres): 555 × 76 × 32
(169·2 × 23·2 × 9·8)
Aircraft: 3 CHSS-2 Sea King helicopters
Main engines: Double reduction geared turbine 21 000 shp; 1 shaft
Boilers: 2 water tube
Speed, knots: 21
Oil fuel, tons: 12 000
Range, miles: 3 600 at 20 knots
Complement: 166 (15 officers, 151 ratings)

Preliminary construction work was begun in 1960. Cost $15·7 million.
The helicopter flight deck is aft with the hangar at the same level and immediately below the funnel. The flight deck can receive the largest and heaviest helicopters. A total of 20 electro-hydraulic winches are fitted on deck for ship-to-ship movements of cargo and supplies, as well as shore-to-ship requirements when alongside.

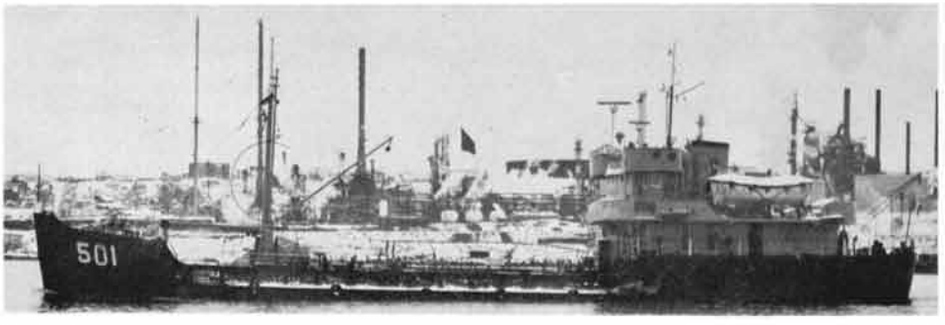
PROVIDER *1978, Canadian Armed Forces*

2 "DUN" CLASS TANKERS

DUNDALK AOTL 501 **DUNDURN** AOTL 502

Displacement, tons: 950
Dimensions, feet (metres): 178·8 × 32·2 × 13 *(54·5 × 9·8 × 3·9)*
Main engine: Diesel; 700 bhp = 10 knots
Complement: 24.

Small tankers, classed as fleet auxiliaries.



DUNDALK *1977, Canadian Armed Forces*

MAINTENANCE SHIP

1 "CAPE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
CAPE BRETON	100	Burrard Dry Dock Co, Vancouver, BC	5 July 1944	7 Oct 1944	25 Apr 1945

Displacement, tons: 9 000 standard; 11 270 full load
Dimensions, feet (metres): 441·5 × 57 × 22·5
(134·6 × 17·5 × 6·9)

Alongside Base Ship for FMUs in Esquimalt. The last ship of a large class which was originally built in Canada for the Royal Navy. Purchased back 1951.

RESEARCH VESSELS

Name	No.	Builders	Commissioned
BLUETHROAT	AGOR 114	Geo. T. Davie & Sons Ltd, Lauzon	28 Nov 1955

Displacement, tons: 785 standard; 870 full load
Dimensions, feet (metres): 157 × 33 × 10 *(47 × 9·9 × 3)*
Main engines: Diesel; 2 shafts; 1 200 bhp = 13 knots

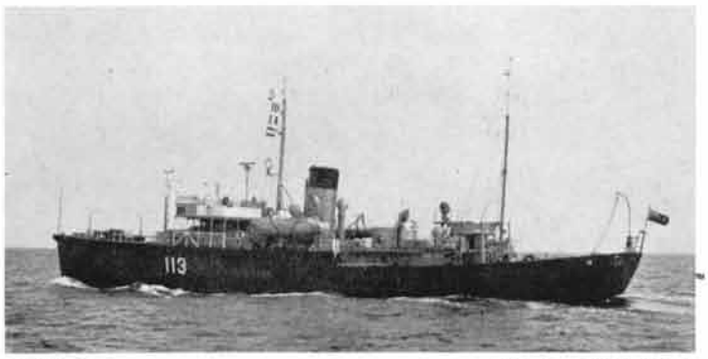
Authorised under 1951 Programme. Laid down on 31 October 1952, launched on 15 September 1955, completed on 28 November 1955 as Mine and Loop Layer. In 1957 she was rated Controlled Minelayer, NPC 114. Redesignated as Cable Layer (ALC) in 1959, and as Research Vessel (AGOR) and GP craft in 1964.

BLUETHROAT *1977, Canadian Armed Forces*

Name	*No.*	*Builders*	*Commissioned*
SACKVILLE	AGOR 113	St John Dry Dock Co	30 Dec 1941

Displacement, tons: 1 085 standard; 1 350 full load
Dimensions, feet (metres): 205 × 33 × 14·5 *(62·5 × 10·1 × 6·4)*
Main engines: Triple expansion; 2 750 ihp = 16 knots
Boilers: 2 SE

Ex-"Flower" class corvette completed on 30 December 1941 and one of the last on the active list. Later converted to loop layer. Designated AN 113—rated cable layer in 1959 (ALC). Redesignated as research vessel 1964. Employed by Naval Research Laboratories for oceanographic work.



SACKVILLE *1976, Michael D. J. Lennon*

Name	*No.*	*Builders*	*Commissioned*
QUEST	AGOR 172	Burrard Dry Dock Co, Vancouver	21 Aug 1969

Displacement, tons: 2 130
Dimensions, feet (metres): 235 × 42 × 15·5 *(71·6 × 12·8 × 4·6)*
Aircraft: Light helicopter
Main engines: Diesel-electric; 2 shafts; 2 950 shp = 16 knots; bow thruster propeller
Range, miles: 10 000 at 12 knots
Complement: 55

Built for the Naval Research Establishment of the Defence Research Board for acoustic, hydrographic and general oceanographic work. Capable of operating in heavy ice in the company of an icebreaker. Construction began in 1967. Launched on 9 July 1968. Based at Halifax.

QUEST *1977, Canadian Maritime Command*

Name	*No.*	*Builders*	*Commissioned*
ENDEAVOUR	AGOR 171	Yarrows Ltd, Esquimalt, BC	9 Mar 1965

Displacement, tons: 1 560
Dimensions, feet (metres): 236 × 38·5 × 13 *(71·9 × 11·7 × 4)*
Aircraft: 1 light helicopter
Main engines: Diesel-electric; 2 shafts; 2 960 shp = 16 knots
Range, miles: 10 000 at 12 knots
Complement: 50 (10 officers, 13 scientists, 25 ratings plus helicopter pilot and engineer)

A naval research ship designed primarily for anti-submarine research. Flight deck 48 by 31 ft. Stiffened for operating in ice-covered areas. She is able to turn in 2·5 times her own length. Two 9 ton Austin-Weston telescopic cranes are fitted. There are two oceanographical winches each holding 5 000 fathoms of wire, two bathythermograph winches and a deep-sea anchoring and coring winch. She has acoustic insulation in her machinery spaces.

ENDEAVOUR *1978, Canadian Armed Forces*

1 ANTI-SUBMARINE HYDROFOIL (PH)

Name	*No.*	*Builders*	*Commissioned*
BRAS D'OR	PH 400	Marine Industries, Sorel	1969 (trials)

Displacement, tons: 180 standard; 237 full load
Dimensions, feet (metres): 150·8 × 21·5 × 15 (hull depth) *(46 × 6·6 × 5·1)*; (7·5 *(2·3)* (60 knots) draught on foils) Foil base 90
Main engines: Pratt & Whitney FT4A-2 gas turbine on foils; 22 000 shp = 50-60 knots
Davey Paxman diesel when hull borne; 2 000 shp = 12-15 knots
Pratt and Whitney ST 6A gas-turbine for hull-borne boost and foil-borne auxiliary power—390 shp

A prototype craft designed by De Havilland Aircraft (Canada) and laid down in July 1968. After very successful trials she was laid up in Category C Reserve, ashore at Halifax in 1971 for five years, a period now extended.

BRAS D'OR *1971, Canadian Armed Forces*

PATROL CRAFT

ADVERSUS	PB 191	**ACADIAN**	PB 194
DETECTOR	PB 192	**NICHOLSON**	PB 195
CAPTOR	PB 193	**SIDNEY**	PB 196

All transferred from RCMP in 1975, except *Nicholson* (75 ft) in 1976.

PATROL ESCORTS/TRAINING SHIPS

6 "BAY" CLASS Ex-MSC (PB)

Name	*No.*	*Builders*	*Commissioned*
FUNDY	PB 159	Davie Shipbuilding Co, Lauzon	27 Nov 1956
CHIGNECTO	PB 160	Davie Shipbuilding Co, Lauzon	1 Aug 1957
THUNDER	PB 161	Port Arthur S.B. Co	3 Oct 1957
COWICHAN	PB 162	Yarrows Ltd, Esquimalt	19 Dec 1957
MIRAMICHI	PB 163	Victoria Machinery Depot Co	28 Oct 1957
CHALEUR	PB 164	Marine Industries Ltd, Sorel	12 Sep 1957

Displacement, tons: 390 standard; 464 full load
Dimensions, feet (metres): 152 × 28 × 7 *(50 × 9·2 × 2·8)*
Main engines: 2 General Motors V-12 diesels; 2 shafts; 2 400 bhp = 16 knots
Oil fuel, tons: 52
Range, miles: 3 290 at 12 knots
Complement: 18+ (2 officers, 16 ratings + trainees)

Extensively built of aluminium, including frames and decks. There were originally 20 vessels of this class of which six were transferred to France, four to Turkey and four sold commercially. Named after Canadian straits and bays. Designation changed from AMC to MCB in 1954. They were redesignated as Patrol Escorts (small) (PF) in 1972 being used as training ships and PB in 1979.

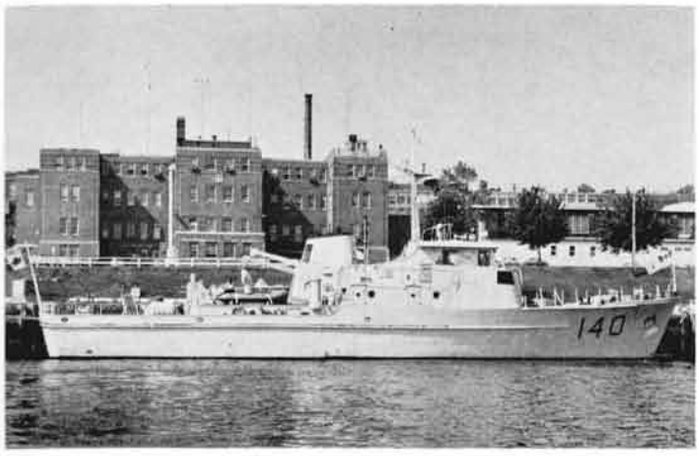
THUNDER *1976, Canadian Armed Forces*

1 "FORT" CLASS PATROL VESSEL (PB)

Name	*No.*	*Builders*	*Commissioned*
FORT STEELE	PB 140	Canadian S.B. and Eng. Co	Nov 1955

Displacement, tons: 85
Dimensions, feet (metres): 118 × 21 × 7 *(36 × 6·4 × 2·1)*
Main engines: 2 Paxman Ventura 12 YJCM diesels; 2 shafts; Kamewa cp propellers; 2 800 bhp = 18 knots
Complement: 16

Steel hull aluminium superstructure. Twin rudders. Acquired by DND in 1973 from RCMP—acts as Reserve Training ship based on Halifax.



FORT STEELE *1976, Canadian Armed Forces*

5 "PORTE" CLASS (GATE VESSELS)

Name	*No.*	*Builders*	*Commissioned*
PORTE ST. JEAN	PB 180	Geo T. Davie	4 June 1952
PORTE ST. LOUIS	PB 183	Geo T. Davie	28 Aug 1952
PORTE DE LA REINE	PB 184	Victoria Machinery	19 Sep 1952
PORTE QUEBEC	PB 185	Burrard Dry Dock	7 Oct 1952
PORTE DAUPHINE	PB 186	Ferguson Ind.	12 Dec 1952

Displacement, tons: 429 full load
Dimensions, feet (metres): 125·5 × 26·3 × 13 *(38·3 × 8 × 4)*
Main engines: Diesel; AC electric; 1 shaft; 600 bhp = 11 knots
Complement: 23 (3 officers, 20 ratings)

Of trawler design. Multi-purpose vessels used for operating gates in A/S booms, fleet auxiliaries, anti-submarine netlayers for entrances to defended harbours. Can be fitted for minesweeping. Designation changed from YNG to YMG in 1954. First four used during summer for training Reserves. *Porte Dauphine* was re-acquired from DOT in 1974 and employed in Reserve Training in Great Lakes area.

Note: Ex-Diving Tender YMT2 of 46 ft is used for sea-cadet training.

PORTE QUEBEC *1977, Canadian Armed Forces*

AUXILIARIES

1 FLEET DIVING SUPPORT SHIP

Name	*No.*	*Builder*	*Commissioned*
CORMORANT (ex-*Aspa Quarto*)	ASXL 20	Italy	10 Nov 1978 (CAF)

Displacement, tons: 2 350
Dimensions, feet (metres): 245 × 39 × 16·5 *(74·7 × 11·9 × 5)*
Main engines: Diesel-electric; 1 800 hp = 14 knots
Complement: 65 (including 8 WRNS from 1980)

Ex-Italian stern trawler bought in 1975 which underwent maintenance and design modification until 1977. She was then taken in hand for conversion by Davie Shipbuilding Ltd, Lauzon, returning to Halifax a year later to commission. She carries two SDL-1 submersibles in a heated hangar. The SDL-1 is a manned untethered craft capable of operations to 2 000 ft with a lock-out compartment for divers.

CORMORANT *1978, Canadian Armed Forces*

2 DIVING TENDERS

Name	*No.*	*Builders*	*Commissioned*
YDT 11	—	Ferguson, Pictou, NS	Jan 1962
YDT 12	—	Ferguson, Pictou, NS	7 Aug 1963

Displacement, tons: 110
Main engines: General Motors diesels; 228 bhp = 10·75 knots
Complement: 23 (3 officers, 20 ratings)

Can operate four divers at a time to 250 ft. Recompression chamber.

2 TORPEDO RECOVERY VESSELS

Name	*No.*	*Builders*	*Commissioned*
SONGHEE	YPT 1	Falconer Marine	1944
NIMPKISH	YPT 120	Falconer Marine	1944

Displacement, tons: 162
Length, feet (metres): 94·5 *(22·8)*
Main engines: 400 bhp
Complement: 7

TUGS

2 "SAINT" CLASS

Name	*No.*	*Builders*	*Commissioned*
SAINT ANTHONY	ATA 531	St. John Dry Dock Co	22 Feb 1957
SAINT CHARLES	ATA 533	St. John Dry Dock Co	7 June 1957

Displacement, tons: 840 full load
Dimensions, feet (metres): 151·5 × 33 × 17 *(46·2 × 10 × 5·2)*
Main engine: Diesel; 1 shaft; 1 920 bhp = 14 knots
Complement: 21

Ocean tugs. Authorised under the 1951 Programme. Originally class of three.

5 "GLEN" CLASS (HARBOUR/COASTAL)

Name	*No.*	*Builders*	*Commissioned*
GLENDYNE	ATA 640	Yarrows, Esquimalt	1975
GLENDALE	ATA 641	Yarrows, Esquimalt	1975
GLENEVIS	ATA 642	Georgetown Sy. PEI	1976
GLENBROOK	ATA 643	Georgetown Sy. PEI	16 Dec 1976
GLENSIDE	ATA 644	Georgetown Sy. PEI	1977

Displacement, tons: 255
Dimensions, feet (metres): 92·5 × 28 × 14·5 *(28·2 × 8·5 × 4·4)*
Main engines: 2 diesels with Voith-Schneider propellers; 1 300 hp = 11·5 knots
Complement: 6

GLENEVIS *4/1979, L. and L. van Ginderen*

5 "VILLE" CLASS (NEW)

Name	*No.*	*Builders*	*Commissioned*
LAWRENCEVILLE	YTL 590	Vito Steel & Barge Co	1974
PARKSVILLE	YTL 591	Vito Steel & Barge Co	1974
LISTERVILLE	YTL 592	Georgetown S.Y. PEI	1974
MERRICKVILLE	YTL 593	Georgetown S.Y. PEI	1974
MARYSVILLE	YTL 594	Georgetown S.Y. PEI	1974

Dimensions, feet (metres): 64 × 15·5 × 9 *(19·5 × 4·7 × 2·7)*
Main engine: Diesel; 1 shaft; 365 bhp = 9·8 knots

Small harbour tugs employed at Esquimalt and Halifax.

Other medium harbour tugs are:
FT1, FT2. Employed as fire tugs, hull numbers YMT 556 and 557 respectively.

6 "VILLE" CLASS (OLD)

Name	*No.*	*Builders*	*Commissioned*
BURRARD (ex-*Lawrenceville*)	YTL 582	Russell Bros	1944
BEAMSVILLE	YTL 583	Russell Bros	1944
QUEENSVILLE	YTL 586	Russell Bros	1944
PLAINSVILLE	YTL 587	Russell Bros	1944
YOUVILLE	YTL 588	Russell Bros	1944
LOGANVILLE	YTL 589	Russell Bros	1944

Dimensions, feet (metres): 40 × 10·5 × 4·8 *(12·2 × 3·2 × 1·5)*
Main engine: Diesel; 1 shaft; 150 bhp

Small harbour tugs now used for Reserve training.

There are small diving tenders YMT 6, YMT 8, YMT 9 and YMT 10, 70 tons, 75 × 18·5 × 8·5 ft, 2 diesels 165 bhp. YMT 1 (46 ft) was transferred to the Naval Research Establishment as a yard craft. Two diving tenders, YSD 1 and YSD 2, entered service in 1965.

1 "WOOD" CLASS

Name	*No.*	*Builders*	*Commissioned*
WILDWOOD	YTL 553	Falconer Marine	1944

Displacement, tons: 65
Dimensions, feet (metres): 60 × 16 × 5 *(18·3 × 4·9 × 1·5)*
Main engine: Diesel; 250 hp = 10 knots
Complement: 3

Medium harbour tug. Used as A/S Target Towing Vessel.

"WOOD" Class *1976, Canadian Armed Forces*

1 SAILING KETCH

ORIOLE QW 3

Based on Esquimalt. Used for officer cadet training.

COAST GUARD

Administration

Minister of Transport:
Hon Jean-Luc Pepin
Deputy Minister of Transport:
Mr. Arthur Kroeger
Administrator, Marine Transportation Administration:
Mr. G. M. Sinclair
Commissioner Canadian Coast Guard:
Mr. W. A. O'Neil

Ships

The Canadian Coast Guard comprises 146 ships and craft of all types. They operate in Canadian waters from the Great Lakes to the northernmost reaches of the Arctic Archipelago.
There are heavy icebreakers, medium icebreakers, buoys tenders and lighthouse re-supply vessels, marine survey craft, weather-oceanographic ships, and many specialised vessels for tasks such as search and rescue, cable lifting and repair, marine research and shallow-draft operations in areas such as the Mackenzie River system and other areas of the Arctic.
The principal bases for the ships are at— St. John's, Newfoundland; Dartmouth, N.S; Saint John, N.B; Charlottetown, P.E.I; Quebec, Sorel and Montreal, Que; Prescott, Amherstburg, Parry Sound, Sault Ste-Marie and Thunder Bay, Ont; Victoria and Prince Rupert, B.C; and at Hay River, on Great Slave Lake.

Establishment

In January 1962 all ships owned and operated by the Federal Department of Transport with the exception of pilotage and canal craft, were amalgamated into the Canadian Coast Guard, a civilian service.

Flag

The Canadian Coast Guard has its own distinctive jack, a red maple leaf on a white ground at the hoist and two gold dolphins on a blue ground at the fly.
Canadian Coast Guard vessels have white funnels with a red band at the top and the red maple leaf against the white.

Missions

The Canadian Coast Guard carries out the following missions:
1. Icebreaking and Escort. Icebreaking is carried out in the Gulf of St. Lawrence and River St. Lawrence and the Great Lakes in winter to assist shipping and for flood control, and in Arctic waters in summer.
2. Icebreaker Aids to Navigation Tenders. Installation, supply and maintenance of fixed and floating aids to navigation in Canadian waters.
3. Organise and provide icebreaker support and some cargo vessels for the annual Northern sealift which supplies bases and settlements in the Canadian Arctic and Hudson Bay.
4. Provide and operate special patrol cutters and lifeboats for marine search and rescue.
5. Provide and operate survey and sounding vessels for the St. Lawrence River Ship Channel.
6. Provide and operate weatherships for Ocean Station "Papa" in the Pacific.
7. Provide and operate vessel for the repairing of undersea cables.
8. Provide and operate vessel for Marine Traffic Control on the St. Lawrence river.
9. Operate a small fleet of aircraft primarily for aids to navigation, ice reconnaissance, and pollution control work.

Strength of the Fleet

Type	*Active*
Heavy Icebreakers	7
Heavy Icebreaker/Cable Ship	1
Medium Icebreaker/Navaids Tenders	7
Light Icebreaker/Navaids Tender	3
Ice Strengthened/Navaids Tenders	9
Non-Ice Strengthened/Navaids Tenders	15
Ocean Weather Ships	2
Offshore Search and Rescue Patrol Vessels	3
Inshore Search and Rescue Patrol Vessels	7
Great Lakes Search and Rescue Patrol Cutters	3
Shorebased Search and Rescue Self-Righting Lifeboats	14
Shorebased Search and Rescue Launches	15
CCG College Cadet Training Vessel	1
Hydraulics Survey Vessels	3
Shore Based Work Boats	18
Auxiliary Landing Craft, Dumb Barges	22
Oil Slicklickers	16
Total	146

Aircraft

Fixed wing	1
Helicopters	35

Hovercraft

Voyageur	1
SR-N-5	1
SR-N-6	1

DELETIONS

1978 *Ernest Lapointe, Eider, Mink, Detector*
1979 *N. B. McLean, Skua*

OCEAN WEATHER SHIPS

Name	*No.*	*Builders*	*Commissioned*
QUADRA	—	Burrard Dry Dock Co Ltd	Mar 1967
VANCOUVER	—	Burrard Dry Dock Co Ltd	4 July 1966

Displacement, tons: 5 600 full load
Dimensions, feet (metres): 404·2 × 50 × 17·5 *(123·2 × 15·2 × 5·3)*
Aircraft: 1 helicopter
Main engines: Turbo-electric; 2 shafts; 7 500 shp = 18 knots
Boilers: 2 automatic Babcock & Wilcox D type
Range, miles: 10 400 at 14 knots
Complement: 96

Turbo-electric twin screw weather and oceanographic vessels for Pacific Ocean service. *Quadra* laid down February 1965, launched 4 July 1966. *Vancouver* laid down March 1964, launched 29 June 1965. They have bow water jet reaction system to assist steering at slow speeds. Flume stabilisation systems are fitted. They are turbo-electric powered, with oil-fired boilers to provide the quiet operation needed for vessels housing much scientific equipment. Their complement includes 15 technical officers such as meteorologists, oceanographers and electronics technicians.

VANCOUVER *1975, Canadian Ministry of Transport*

ICEBREAKERS

HYBRID NUCLEAR POLAR ICEBREAKER

The Canadian Coast Guard is designing a 42 000 ton nuclear/gas turbine/electric propelled icebreaker (682·2 × 105 × 59 *(208 × 32 × 18)*) capable of a service speed in open water of 19 knots. If approved construction will be completed in the mid- to late 1980s. Complement, 172.

2 + 1 "R" CLASS

Name	*No.*	*Builders*	*Commissioned*
PIERRE RADISSON	—	Burrard D.D. Co Ltd, Vancouver	June 1978
FRANKLIN	—	Burrard D.D. Co Ltd, Vancouver	Mar 1979
—	—	Port Wellard D.D. Co Ltd	—

Displacement, tons: 6 400 standard; 8 180 full load
Dimensions, feet (metres): 322 × 64 × 23·5 *(98·1 × 19·5 × 7·2)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 6 diesels; 18 000 hp; 2 electric motors, 13 600 hp; 2 shafts = 16 knots
Oil fuel, tons: 2 240
Range, miles: 20 000
Complement: 64 (11 spare billets)

First two ordered on 1 May 1975. *Pierre Radisson* laid down on 16 February 1976 and launched on 3 June 1977. *Franklin* laid down on 4 January 1977, launched on 10 March 1978. Third ship ordered 1980.

PIERRE RADISSON *1978, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
LOUIS ST. LAURENT	—	Canadian Vickers Ltd, Montreal	Oct 1969

Displacement, tons: 13 800 full load
Dimensions, feet (metres): 366·5 × 80 × 31 *(111·7 × 24·4 × 9·5)*
Aircraft: 2 helicopters
Main engines: Turbo-electric; 3 shafts; 24 000 shp = 17·75 knots
Range, miles: 16 000 miles at 13 knots cruising speed
Complement: Total accommodation for 216

She is larger than any of the former Coast Guard icebreakers. She has a helicopter hangar below the flight deck, with an elevator to raise the two helicopters to the deck when required. She was launched on 3 December 1966. She is officially rated as a Heavy Icebreaker.

LOUIS ST. LAURENT *1971, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
NORMAN McLEOD ROGERS	—	Canadian Vickers Ltd, Montreal	Oct 1969

Displacement, tons: 6 320 full load
Dimensions, feet (metres): 295 × 62·5 × 20 *(90 × 19·1 × 6·1)*
Aircraft: 1 helicopter
Landing craft: 2
Main engines: 4 diesels and 2 gas turbines powering 2 electric motors; 2 shafts; 12 000 shp = 15 knots
Complement: 55

Built for use in the Gulf of St. Lawrence and East Coast waters. This is the world's first application of gas turbine/electric propulsion in an icebreaker. Officially rated as a Heavy Icebreaker.

NORMAN McLEOD ROGERS *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
JOHN CABOT	—	Canadian Vickers Ltd, Montreal	July 1965

Displacement, tons: 6 375 full load
Dimensions, feet (metres): 313·3 × 60 × 21·5 *(95·6 × 18·3 × 6·6)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 2 shafts; 9 000 shp = 15 knots
Range, miles: 10 000 at 12 knots
Complement: 85 officers and men

Laid down May 1963 and launched on 15 April 1964. Combination cable repair ship and icebreaker. Designed to repair and lay cable over the bow only. For use in East Coast and Arctic waters. Bow water jet reaction manoeuvring system, heeling tanks and Flume stabilisation system. Three circular storage holds handle a total of 400 miles of submarine cable. Personnel include technicians and helicopter pilots.

JOHN CABOT *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
JOHN A. MACDONALD	—	Davie Shipbuilding Ltd, Lauzon	Sep 1960

Displacement, tons: 9 160 full load
Measurement, tons: 6 186 gross
Dimensions, feet (metres): 315 × 70 × 28 *(96 × 21·3 × 8·5)*
Aircraft: 2 helicopters
Main engines: Diesel-electric; 15 000 shp = 15·5 knots

Officially rated as a Heavy Icebreaker. Launched 3 October 1959.

JOHN A. MACDONALD *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
LABRADOR	—	Marine Industries Ltd, Sorel	8 July 1954

Displacement, tons: 6 490 full load
Measurement, tons: 3 823 gross
Dimensions, feet (metres): 290 × 63·5 × 29 *(88·4 × 19·4 × 8·8)*
Aircraft: 2 helicopters
Main engines: Diesel-electric; 10 000 shp = 16 knots

Ordered in February 1949, laid down on 18 November 1949, launched on 14 December 1951 and completed for the Royal Canadian Navy but transferred to the Department of Transport in February 1958. Officially rated as a Heavy Icebreaker. She was the first naval vessel to traverse the North West passage and circumnavigate North America.

LABRADOR *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
d'IBERVILLE	—	Davie Shipbuilding Ltd, Lauzon	May 1953

Displacement, tons: 9 930 full load
Measurement, tons: 5 678 gross
Dimensions, feet (metres): 310 × 66·5 × 30·2 *(94·5 × 20·3 × 9·2)*
Aircraft: 1 helicopter
Main engines: Steam reciprocating; 10 800 ihp = 15 knots

Officially rated as a Heavy Icebreaker.

d'IBERVILLE *1975, Canadian Coast Guard*

AID TO NAVIGATION VESSELS

Name	*No.*	*Builders*	*Commissioned*
GRIFFON	—	Davie Shipbuilding Ltd, Lauzon	Dec 1970

Displacement, tons: 3 096
Dimensions, feet (metres): 234 × 49 × 15·5 *(71·4 × 14·9 × 4·7)*
Aircraft: 1 helicopter
Main engines: Diesel; 4 000 bhp; 13·5 knots

Officially rated as Medium Icebreaking Aid to Navigation Vessel.

GRIFFON *1980, L. and L. van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
J. E. BERNIER	—	Davie Shipbuilding Ltd, Lauzon	Aug 1967

Displacement, tons: 3 096
Dimensions, feet (metres): 231 × 49 × 16 *(70·5 × 14·9 × 4·9)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 4 250 bhp = 13·5 knots (trial speed)

Officially rated as Medium Icebreaking Aid to Navigation Vessel.

J. E. BERNIER *1980, L. and L. van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
CAMSELL	—	Burrard Dry Dock Co Ltd	Oct 1959

Displacement, tons: 3 072 full load
Measurement, tons: 2 020 gross
Dimensions, feet (metres): 223·5 × 48 × 16 *(68·2 × 14·6 × 4·9)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 4 250 shp = 13 knots

Launched on 17 February 1959. Officially rated as Medium Icebreaking Aid to Navigation Vessel.

CAMSELL *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
MONTCALM	—	Davie Shipbuilding Ltd, Lauzon	June 1957
WOLFE	—	Canadian Vickers Ltd, Montreal	Nov 1959

Displacement, tons: 2 017 full load *(Montcalm)*; 2 995 *(Wolfe)*
Dimensions, feet (metres): 220 × 48 × 16 *(67·2 × 14·7 × 5) (Montcalm)*;
252 × 48·3 × 16·3 *(76·9 × 14·7 ×5) (Wolfe)*
Aircraft: 1 helicopter
Main engines: Steam reciprocating; 4 000 ihp = 13 knots

Montcalm launched on 23 October 1956. Officially rated as Medium Icebreaking Aid to Navigation Vessels. *Wolfe* has a modified bow section.

WOLFE *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
ALEXANDER HENRY	—	Port Arthur S.B. Ltd	July 1959

Displacement, tons: 2 497 full load
Measurements, tons: 1 647 gross
Dimensions, feet (metres): 210 × 43·5 × 16 *(64 × 13·3 × 4·9)*
Main engines: Diesel; 3 550 bhp = 13 knots

Launched on 18 July 1958. Officially rated as a Medium Icebreaking Aid to Navigation Vessel.

ALEXANDER HENRY *1978, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
SIR HUMPHREY GILBERT	—	Davie Shipbuilding Ltd, Lauzon	June 1959

Displacement, tons: 3 000 full load
Measurement, tons: 1 930 gross
Dimensions, feet (metres): 220 × 48 × 16·3 *(67 × 14·6 × 5·0)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 4 250 shp = 13 knots

Officially rated as Medium Icebreaking Aid to Navigation Vessel.

SIR HUMPHREY GILBERT *1970, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
SIR WILLIAM ALEXANDER	—	Halifax Shipyards Ltd	June 1959

Displacement, tons: 3 555 full load
Measurements, tons: 2 153 gross
Dimensions, feet (metres): 227·5 × 45 × 17·5 *(69·4 × 13·7 × 5·3)*
Main engines: Diesel-electric; 4 250 shp = 15 knots

Launched on 13 December 1958. Equipped with Flume Stabilisation System. Officially rated as a Medium Icebreaking Aid to Navigation Vessel.

SIR WILLIAM ALEXANDER *1975, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
TRACY	—	Port Weller Drydocks	1968

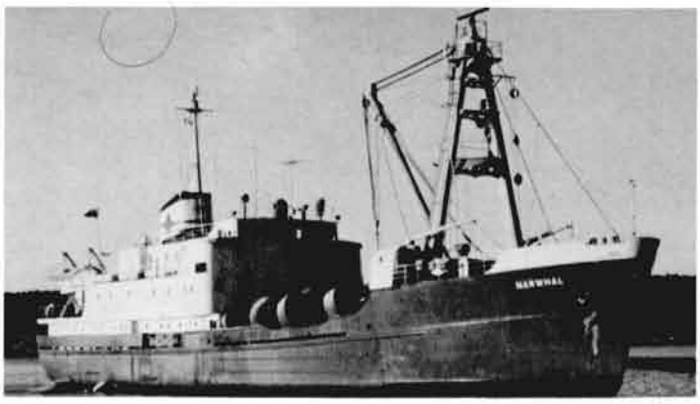
Displacement, tons: 1 300
Dimensions, feet (metres): 251·5 × 42 × 12 *(76·7 × 12·8 × 3·7)*
Main engines: Diesel; 2 000 bhp = 11 knots

Officially rated as Light Icebreaking Aid to Navigation Vessel.

Name	*No.*	*Builders*	*Commissioned*
NARWHAL	—	Canadian Vickers Ltd, Montreal	July 1963

Measurement, tons: 2 064 gross
Dimensions, feet (metres): 251·5 × 42 × 12 *(76·7 × 12·8 × 3·7)*
Main engines: Diesel; 2 000 bhp
Range, miles: 9 200 cruising
Complement: 32

Originally rated as Sealift Stevedore Depot Vessel, now re-rated as Light Icebreaking Aid to Navigation Vessel.



NARWHAL *1975, Canadian Coast Guard*

Name	No.	Builders	Commissioned
SIMON FRASER	—	Burrard D. Y. Co Ltd	Feb 1960
TUPPER	—	Marine Industries Ltd	Dec 1959

Displacement, tons: 1 876 full load
Measurements, tons: 1 357 gross
Dimensions, feet (metres): 204·5 × 42 × 14 *(62·4 × 12·8 × 4·3)*
Main engines: Diesel-electric; 2 900 shp = 13·5 knots

Simon Fraser was launched on 18 August 1959. Both officially rated as a Light Icebreaking Aid to Navigation Vessels.

SIMON FRASER *1978, Canadian Coast Guard*

Name	No.	Builders	Commissioned
THOMAS CARLETON	—	St. John Dry Dock Ltd	1960

Displacement, tons: 1 532 full load
Dimensions, feet (metres): 180 × 42 × 13 *(54·9 × 12·8 × 4)*
Main engines: Diesel; 2 000 bhp = 12 knots

Officially rated as a Light Icebreaking Aid to Navigation Vessel.

Name	No.	Builders	Commissioned
WALTER E. FOSTER	—	Canadian Vickers Ltd, Montreal	Dec 1954

Displacement, tons: 2 715 full load
Measurement, tons: 1 672 gross
Dimensions, feet (metres): 229·2 × 42·5 × 16 *(69·9 × 12·9 × 4·9)*
Main engines: Steam reciprocating; 2 000 ihp = 12·5 knots

Officially rated as a Light Icebreaking Aid to Navigation Vessel.

WALTER E. FOSTER *1975, Canadian Coast Guard*

Name	No.	Builder	Commissioned
EDWARD CORNWALLIS	—	Canadian Vickers Ltd, Montreal	Dec 1949

Displacement, tons: 3 700 full load
Measurement, tons: 1 965 gross
Dimensions, feet (metres): 259 × 43·5 × 18 *(79 × 13·3 × 5·5)*
Main engines: Steam reciprocating; 2 800 ihp = 13·5 knots

Launched on 5 August 1949. In reserve . Officially rated as a Light Icebreaking Aid to Navigation Vessel.

EDWARD CORNWALLIS *1971, Canadian Coast Guard*

Name	No.	Builders	Commissioned
SIMCOE	—	Canadian Vickers Ltd, Montreal	1962

Displacement, tons: 1 300 full load
Dimensions, feet (metres): 179·5 × 38 × 12 *(54·7 × 11·6 × 3·7)*
Main engines: Diesel-electric; 2 000 shp = 12 knots

Officially rated as an Ice Strengthened Aid to Navigation Vessel.

Name	No.	Builders	Commissioned
BARTLETT	—	Marine Industries, Sorel	Dec 1979
PROVO WALLIS	—	Marine Industries, Sorel	Oct 1979

Displacement, tons: 1 620
Dimensions, feet (metres): 189·3 × 42·5 × 12·5 *(57·7 × 13 × 3·8)*
Main engine: Diesel; 1 760 bhp = 12 knots

Officially rated as Ice Strengthened Aid to Navigation Vessels.

BARTLETT *1975, Canadian Coast Guard*

Name	No.	Builders	Commissioned
MONTMORENCY	—	Davie Shipbuilding Ltd, Lauzon	Aug 1957

Displacement, tons: 1 006 full load
Measurement, tons: 750 gross
Dimensions, feet (metres): 163× 34 × 11 *(49·7 × 10·2 × 3·4)*
Main engine: Diesel; 1 200 bhp

Officially rated as an Ice Strengthened Aid to Navigation Vessel.

MONTMORENCY *1975, Canadian Coast Guard*

Name	No.	Builders	Commissioned
SKIDEGATE	—	Burrard Dry Dock Co	?

Displacement, tons: 360
Dimensions, feet (metres): 101 × 26·6 × 7·8 *(30·8 × 8·1 × 2·4)*
Main engine: Diesel; 640 bhp = 11 knots

Modified 1977. Small Aid to Navigation Tender.

Name	No.	Builders	Commissioned
NAMAO	—	Riverton Boat Works, Manitoba	1975

Displacement, tons: 380
Dimensions, feet (metres): 110 × 28 × 7 *(33·5 × 8·5 × 2·1)*
Main engines: 2 diesels; 1 350 shp = 11·5 knots
Range, miles: 2 000 at 11 knots

Buoy tender for Lake Winnipeg.

Name	No.	Builders	Commissioned
ALEXANDER MACKENZIE	—	Burrard Dry Dock Ltd	1950
SIR JAMES DOUGLAS	—	Burrard Dry Dock Ltd	Nov 1956

Displacement, tons: 720 full load
Dimensions, feet (metres): 150 × 30 × 10·3 *(45·7 × 9 × 3·1)*
Main engine: Diesel; 1 000 bhp

Officially rated as an Aid to Navigation Tenders.

Name	No.	Builders	Commissioned
ROBERT FOULIS	—	St. John Drydock	1969

Displacement, tons: 260
Dimensions, feet (metres): 104 × 25 × 7 *(31·7 × 7·6 × 2·1)*
Main engine: Diesel; 960 bhp = 10 knots

Officially rated as an Aid to Navigation Tender.

Name	*No.*	*Builders*	*Commissioned*
VERENDRYE	—	Davie Shipbuilding Ltd, Lauzon	Oct 1959

Displacement, tons: 400 full load
Dimensions, feet (metres): 125 × 26 × 7 *(38·1 × 7·9 × 2·1)*
Main engine: Diesel; 760 bhp

Officially rated as an Aid to Navigation Tender.

VERENDRYE *6/1978, L. and L. van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
MONTMAGNY	—	Russel Bros, Owen Sound	May 1963

Displacement, tons: 565 full load
Dimensions, feet (metres): 148 × 29 × 8 *(45·1 × 10·2 × 2·4)*
Main engine: Diesel; 1 000 bhp

Officially rated as an Aid to Navigation Tender.

KENOKI

Displacement, tons: 270?
Dimensions, feet (metres): 108 × 36 × 5 *(32·9 × 11 × 1·5)*
Main engine: Diesel; 940 bhp = 10 knots

Officially rated as an Aid to Navigation Tender.

NOKOMIS

Displacement, tons: 64
Dimensions, feet (metres): 66 × 17 × 7 *(20·1 × 5·2 × 2·1)*
Main engine: Diesel; 120 bhp

Officially rated as an Aid to Navigation Tender.

SEARCH AND RESCUE VESSELS

TYPE 600 (LARGE SEARCH AND RESCUE CUTTERS)

Name	*No.*	*Builders*	*Commissioned*
GRENFELL (ex-*Baffin Service*)	—	Bel-Air S.Y, Vancouver, BC	1973

Displacement, tons: 2 080
Dimensions, feet (metres): 184·9 × 45·1 × 14 *(56·1 × 13·7 × 4·3)*
Main engines: 4 diesels; 6 560 hp = 14·5 knots
Range, miles: 12 000

GRENFELL *1979, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
ALERT	—	Davie Shipbuilding Ltd, Lauzon	Dec 1969

Displacement, tons: 2 025
Dimensions, feet (metres): 234·3 × 39·9 × 15·1 *(71·4 × 12·2 × 4·6)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 7 716 hp = 18·75 knots
Range, miles: 6 000

ALERT *1979, Canadian Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
DARING (ex-*Wood*, MP 17)	—	Davie Shipbuilding Ltd, Lauzon	July 1958

Displacement, tons: 600 standard
Dimensions, feet (metres): 178 × 29 × 9·8 *(54·3 × 8·8 × 3)*
Main engines: 2 Fairbanks-Morse diesels; 2 shafts; 2 660 bhp = 16 knots

Used for patrol on the east coast of Canada, this ship is built of steel, strengthened against ice, with aluminium superstructure. Transferred from the Royal Canadian Mounted Police Marine Division to the Ministry of Transport in 1971, and renamed *Daring*. Offshore Patrol Cutter.

DARING *1979, Canadian Coast Guard*

TYPE 500 (INTERMEDIATE SEARCH AND RESCUE CUTTER)

Name	*No.*	*Builders*	*Commissioned*
VILLE MARIE	—	Owen Sound, Ontario	1960

Displacement, tons: 493 full load
Dimensions, feet (metres): 132·5 × 28·6 × 9·6 *(40·4 × 8·7 × 2·9)*
Main engines: Diesel-electric; 1 280 hp = 13·5 knots

Former Sounding and Sweeping Vessel.

VILLE MARIE *1979, Canadian Coast Guard*

5 TYPE 500 "R" CLASS (CUTTERS)

Name	*No.*	*Builders*	*Commissioned*
RACER	—	Yarrows Ltd, Esquimalt, BC	1963
RALLY	—	Davie Shipbuilding Ltd, Lauzon, PQ	1963
RAPID	—	Ferguson Industries, Pictou, NS	1963
READY	—	Burrard Dry Dock, Vancouver BC	1963
RIDER	—	Victoria Machinery Depot, Victoria, BC	1963

Measurement, tons: 140 gross
Dimensions, feet (metres): 95·2 × 20 × 6·5 *(29 × 6·1 × 2)*
Main engines: 4 diesels; 2 400 bhp; 2 shafts = 20 knots

Rider, completed for the Department of Fisheries, was taken over by the Coast Guard in March 1969.

3 TYPE 400 (SMALL SEARCH AND RESCUE CUTTERS)

Name	*No.*	*Builders*	*Commissioned*
SPINDRIFT	—	Cliff Richards Ltd, Meaford, Ontario	1963
SPRAY	—	J. J. Taylor & Sons Ltd, Toronto	1963
SPUME	—	Grew Ltd, Penetanguishene, Ontario	1964

Measurement, tons: 57 gross
Dimensions, feet (metres): 70 × 16·8 × 4·7 *(21·4 × 5·1 × 1·4)*
Main engines: 2 diesels; 1 050 bhp = 19 knots

Employed on Great Lakes Patrol.

SPINDRIFT *1980, Canadian Coast Guard*

2 TYPE 400 (SMALL SEARCH AND RESCUE CUTTERS)

Name	*No.*	*Builders*	*Commissioned*
—	—	Breton Industrial and Machinery, Pt. Hawkesbury, NS	1980
—	—	Breton Industrial and Machinery, Pt. Hawkesbury, NS	1980

Dimensions, feet (metres): 65 × 16·7 × 5·2 *(21·3 × 5·5 × 1·7)*
Main engines: 2 diesels; 1 300 hp = 24 knots

14 TYPE 300 (SEARCH AND RESCUE LIFEBOATS)

CG 101-109, 114-118

Displacement, tons: 38
Dimensions, feet (metres): 44·1 × 12·7 × 3·4 *(13·5 × 3·9 × 1·1)*
Main engine: Diesel; 360 hp = 14 knots

CG 101 built in the USA—remainder in Canada.

SHORE-BASED CRAFT

DUMIT **ECKALOO** **MISKANAW** **TEMBAH** **NAHIDIK**

Assist navigation in Mackenzie River operations. Small buoy-tender type.

TEMBAH *1978, Canadian Coast Guard*

1 "R" CLASS (TYPE 500) (CUTTER)

RELAY

Of similar dimensions etc. as the Search and Rescue Cutters. Used as St. Lawrence River Marine Traffic Control Vessel. Built at Kingston SY.

RELAY *1980, Canadian Coast Guard*

TRAINING SHIP

MIKULA

Displacement, tons: 617
Dimensions, feet (metres): 128 × 30 × 11 *(39 × 9·2 × 3·4)*
Main engine: Diesel; 150 bhp = 9 knots

Converted Light Vessel.

MIKULA *1978, Canadian Coast Guard*

SURVEY AND SOUNDING VESSELS

BEAUPORT

Displacement, tons: 767 full load
Dimensions, feet (metres): 167·5 × 24 × 9 *(51·1 × 7·3 × 2·7)*
Main engines: Diesels; 1 280 bhp

Completed in 1960.

BEAUPORT *1978, Canadian Coast Guard*

NICOLET

Displacement, tons: 935 full load
Dimensions, feet (metres): 166·5 × 35 × 9·6 *(50·8 × 10·7 × 2·9)*
Main engines: Diesels; 1 350 bhp

NICOLET *1978, Canadian Coast Guard*

There are also two smaller vessels *Glendada* and *Jean Bourdon* for the St. Lawrence Ship Channel.

DEPARTMENT OF FISHERIES AND OCEANS

Administration

Deputy Minister of Fisheries and Oceans:
Donald D. Tansley
Director, Ship Branch:
D. R. Saxon

Ships

The Fisheries and Oceans fleet of Fishery Patrol, Research and Survey Vessels consists of 22 major ships more than 98 ft in length, 246 ships between 20 and 98 ft in length and more than 500 small craft under 20 ft in length. It is Canada's second largest civilian-manned fleet, with a replacement cost estimated at more than $365 million.

FISHERY PATROL VESSELS

Name	*Dimensions (feet)*	*Displacement*	*Completed*	*Region*
CAPE ROGER	205 × 40 × 16	1 461	1977	Nf
CHEBUCTO	179 × 31 × 11·4	865	1966	Mar.
TANU	179 × 32 × 15	746 GRT	1968	Pac.
CYGNUS	153 × 28 × 10	707	1959	Mar.
CAPE HARRISON	122 × 27 × 8	450	1977	Nf
LOUISBOURG	122 × 27 × 8	450	1977	Mar.
HOWAY	116 × 21 × 10	198 GRT	1936	Pac.
LAURIER	113 × 21 × 10	201 GRT	1936	Pac.
GOLDEN BAY	100 × 18 × 7	136 GRT	1975	Que.
COBEQUID BAY	77 × 18 × 8·5	201	1967	Mar.
ARROW POST	72 × 22 × 10	46 GRT	1944	Pac.
BELLE BAY	69 × 15·8 × 8	57 GRT	1957	Nf
CUMELLA	69 × 16 × 6·6	114	1951	Mar.
CRATENA	68·5 × 16 × 5	94	1953	Mar.
SOOKE POST	68 × 17 × 5	59 GRT	1973	Pac.
GOOSE BAY	66 × 16 × 6	44	1968	Nf
HAWKE BAY	66 × 16 × 6·5	44	1965	Nf
PISTOLET BAY	66 × 16 × 6	44	1966	Nf
BURIN BAY	66 × 16 × 6	44	1967	Nf
ATLIN POST	65 × 17 × 4	57 GRT	1975	Pac.
KITIMAT II	65 × 17 × 5	57 GRT	1974	Pac.
COMOX POST	65 × 17 × 4	57 GRT	1975	Pac.
CHILCO POST	63 × 17 × 4	57 GRT	1975	Pac.
GANDER BAY	61 × 16 × 8·8	44	1969	Nf
GARIA BAY	61 × 19 × 7	49	1961	Nf
BADGER BAY	57 × 15·3 × 6·5	42	1954	Nf
CUTTER ROCK	53 × 14 × 6	36 GRT	1967	Pac.
CHRISTIE BAY I	52 × — × —	35	1972	West.
STUART POST	52 × 15 × 4	37 GRT	1973	Pac.
BABINE POST	52 × 15 × 4	37 GRT	1972	Pac.
NORTH ROCK	50 × 15 × 4	31 GRT	1975	Pac.
SURGE ROCK	48 × 14 × 5	33 GRT	1964	Pac.
BOLTENIA	48 × 12 × 4	29 GRT	1951	Nf
BONILLA ROCK	48 × 15 × 6	41 GRT	1971	Pac.
LOMOND	47 × 14 × 8	24 GRT	1959	Nf
BEAVER ROCK	47 × 14 × 5	31 GRT	1961	Pac.
PILLAR ROCK	47 × 14 × 5	31 GRT	1961	Pac.
FALCON ROCK	47 × 19 × 5	28 GRT	1960	Pac.
BUCTOUCHE LIGHT	46 × 13 × 6	20 GRT	1963	Mar.
TEMPLE ROCK	44 × 12 × 5	23 GRT	1960	Pac.
11A-6538, 11A-6539	43 × 13 × 5	36	1969	Mar.
SEAL ROCK	43 × 12 × 5	24 GRT	1959	Pac.
RUSTICO LIGHT	42 × 13 × 7	17 GRT	1965	Mar.
11A-6204, 11A-6206	42 × 13 × 5	45	1969	Mar.
11A-5831, 11A-5832	42 × 13 × 5	45	1968	Mar.
MARILA	42 × — × —	10 GRT	1955	West.
1B-1284	42 × 15 × 5	—	1975	Mar.
1B-1452	42 × 13 × 3·5	45	1979	Mar.
BRAMA	41 × 12 × 5	20 GRT	1955	Pac.
GAVIA	41 × 11 × 5	17 GRT	1955	Pac.
WALKER ROCK	40 × 13 × 5	15 GRT	1976	Pac.
STAR ROCK	40 × 11 × 5	18 GRT	1957	Pac.
7C-109	40 × 11 × 4	30	1966	Mar.
17A-601	40 × 13 × 3	23	1976	Mar.

Note: Regions:— Newfoundland = Nf; Maritimes = Mar.; Western = West.; Pacific = Pac.; Quebec = Que.

Vessels less than 40 ft in length:

Maritimes	*Pacific*
LA BRADELLE	**GULL ROCK**
11A-5743	**HERON ROCK**
11A-5830	**LEGACE BAY**
20A-1138	**LITTLE ATLIN**
20A-1139	**LITTLE BRAMA**
20A-1141	**LITTLE CRESCEN**
20A-1142	**LITTLE FALCON**
20A-1152	**LITTLE NAHMINT**
20A-1153	**LITTLE PILLAR**
JOHNNY HOE	**LITTLE RIVER**
	LITTLE ROCK
Western	**MARBLE ROCK**
	MISSION JET
SANGSTERCRAFT	**NIMPKISH**
	RD 105
Pacific	**ROANNA**
	TATCHIE RIVER
FD 202	**VANCOUVER SPORT FISHING**
PETREL ROCK	**VEDDER ROCK**
ANCHOR ROCK	**WARRIOR ROCK**
BABINE RIVER	**13K49012**
CANOE ROCK	**13K56195**
CRESCENT ROCK	**13K76101**
GALE ROCK	**13K76026**
BERTRAM	**13K76149**
BELUGA	

CAPE VERDE

Ministerial

Minister of Defence:
M. Silvino da Luz

Ports

With Soviet assistance four domestic ports are to be built at Palmeira (I. de Sal), Salrei (I. Boa Vista), Tarrafal (I. Sao Nicolau) and Janela (I. Santo Antao). As well as these a naval repair yard is to be built at Porte Grande (I. de Sao Vicente).

Mercantile Marine

Lloyd's Register of Shipping:
22 vessels of 11 426 tons gross.

3 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT)

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm L65 (twins)
A/S weapons: 12 DCs
Main engines: 3 diesels; 3 shafts; 13 200 hp = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

These were supplied without the usual four torpedo tubes. Delivered in January, March and July 1979.

1 Ex-SOVIET "ZHUK" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 60
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 4—14·5 mm (twins)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

Transferred 1980.

Note: It is also reported that a small ex-Portuguese hydrographic vessel is in service.

CHILE

Ministerial

Minister of National Defence:
General Cesar Raul Benavides Escobar

Headquarters' Appointments

Commander-in-Chief of the Navy:
Admiral José Toribio Merino Castro
Chief of the Naval Staff:
Vice-Admiral Luis de Los Rios Echeverria

Diplomatic Representation

Naval Attaché in Brasilia:
Captain Fernando Navajes Irigoyen
Naval Attaché in Buenos Aires, Montevideo and Asunción:
Captain Rodolfo Calderon Aldenate
Naval Attaché in Lima:
Captain Humberto Ramirez Olivari
Naval Attaché in London, Paris, The Hague and Stockholm:
Captain Osvaldo Schwarzenberg
Naval Attaché in Madrid:
Captain Raul Manriquez Lagos
Naval Attaché in Quito and Bogota:
Captain Mauricio Lagos Barrios
Naval Attaché in Tokyo:
Captain G. P. Niedbolski
Naval Attaché in Washington:
Rear-Admiral German G. Toro

Personnel

(a) 1981: 28 600 (1 985 officers, 23 935 ratings, 2 680 marines)
(b) 1 year's national service

Naval Bases

Talcahuano. Main Naval Base, Schools, major repair yard, (2 dry docks, 3 floating docks) 2 floating cranes.
Valparaiso. Naval Base, Schools, major repair yard, 1 floating dock.
Puerto Montt. Small naval base.
Punta Arenas. Small naval base. Repair yard with slipway.
Puerto Williams. Small naval base.
Iquique. Small naval base.

Maritime Air

Personnel—500

4 Bell 206 A Jetrangers
12 Bell 47
6 EMB-111
1 Piper PA-31-310 Navajo
3 EMB-110 Bandeirante
2 Sikorsky S-58
4 Casa 212 Aviocar
10 Alouette III
8 Pilatus PC-7

General

Except for the two "Leander" class, the two "Oberon" class, one LPC and four Lürssen FAC the main units of the fleet are all reaching advanced age, even the "Almirante" class, being 17 years old. With the remainder having hull-lives of 30-40 years a replacement programme is clearly needed if the 4 000 miles of coastline is to be patrolled to a 200 mile limit.

Infanteria de Marina

1 Brigade and Coast Defence units (2 680 marines).
Four bases at Iquique, Punta Arenas, Talcahuano and Valparaiso in addition to an embarked battalion.

Strength of the Fleet

Type	*Active*	*Building*
Patrol Submarines	3	2
Cruisers	3	—
Destroyers	6	—
Frigates	5	—
Patrol Ships	3	—
Light Transports	2	—
Landing Ships (Tank)	2	—
Landing Craft	11	—
Fast Attack Craft (Missile)	1	2
Fast Attack Craft (Patrol)	4	—
Fast Attack Craft (Torpedo)	4	—
Large Patrol Craft	3	—
Coastal Patrol Craft	22	—
Survey Ship	1	—
Sail Training Ship	1	—
Transports	6	—
Tankers	2	—
Floating Docks	2	—
Tugs	4	—

Mercantile Marine

Lloyd's Register of Shipping:
172 vessels of 614 425 tons gross

DELETIONS

Landing Craft

1977 *Aspirante Morel, Grumete Diaz, Comandante Toro,* (ran aground, beyond repair)
1979 *Valdivia*
1980 *Aguila* (scuttled in August after damage by grounding)

Light Forces

1977 *Contramaestre Ortiz*

Tanker

1977 *Jorge Montt*

Tugs

1978 *Ancud, Caupolican, Monreal*

PENNANT LIST

Submarines

21 Simpson
22 O'Brien
23 Hyatt

Cruisers

02 O'Higgins
03 Prat
04 Latorre

Destroyers/Frigates

06 Condell
07 Almirante Lynch
14 Blanco Encalada
15 Cochrane
16 Ministro Zenteno
17 Ministro Portales
18 Almirante Riveros
19 Almirante Williams
26 Serrano
27 Orella
29 Uribe

Patrol Forces

60 Lientur
62 Lautaro
63 Sergento Aldea

Light Forces

37 Papudo
75 Marinero Fuentealba
76 Cabo Odger
80 Guacolda
81 Fresia
82 Quidora
83 Tegualda

Survey Ship

64 Yelcho

Training Ship

43 Esmeralda

Submarine Support Ship

70 Angamos

Amphibious Forces

88 Comandante Hemmerdinger
89 Comandante Araya
90 Elicura
94 Orompello

Transports

45 Piloto Pardo
47 Aquiles
110 Meteoro
111 Cirujano Videla
112 Grumete Perez Huemel

Tankers

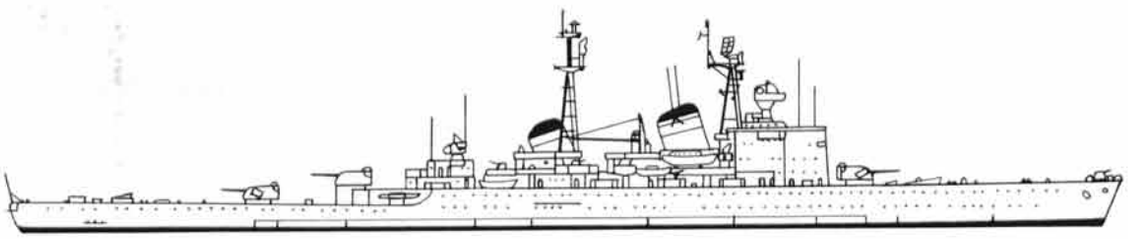
53 Araucano
54 Beagle

Tugs

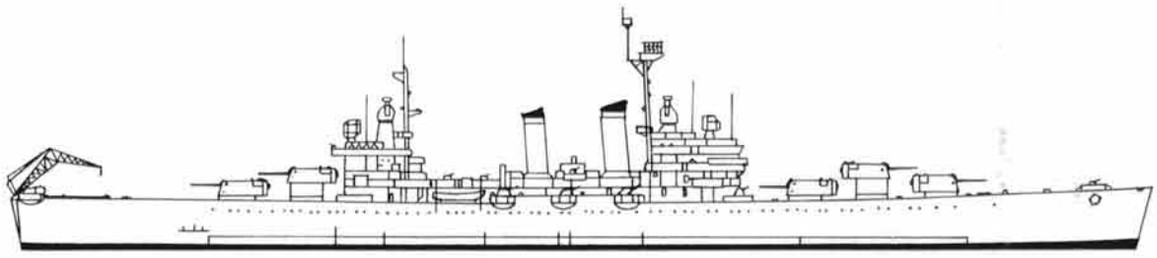
73 Colocolo
120 Reyes
128 Cortez

Floating Docks

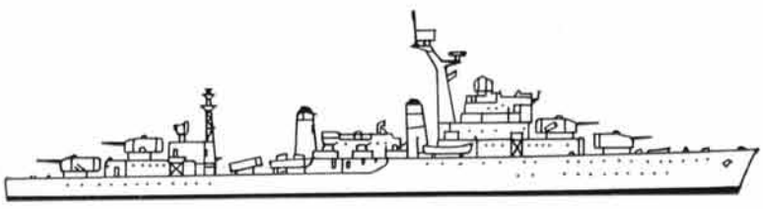
131 Ingeniero Mery
132 Mutilla



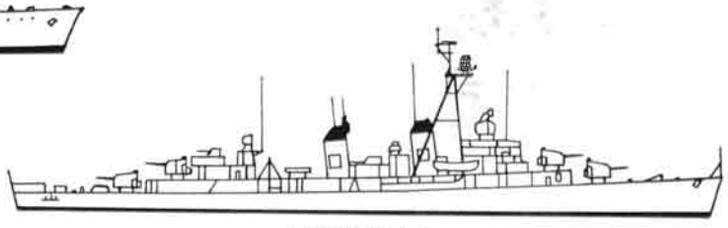
LATORRE



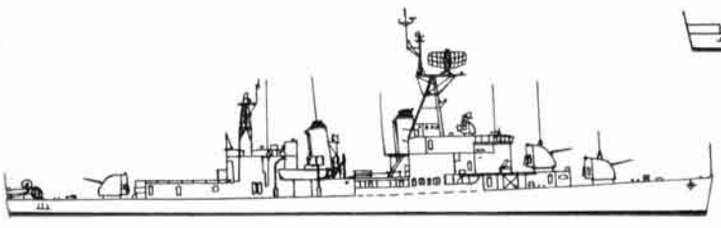
"BROOKLYN" Class



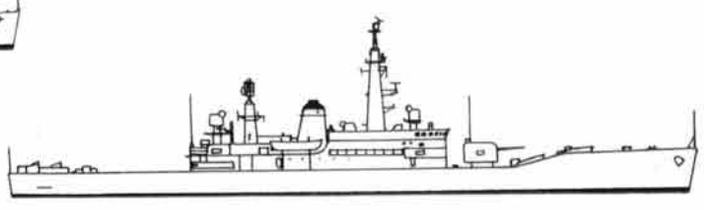
"ALMIRANTE" Class



"FLETCHER" Class



"ALLEN M. SUMNER" Class



"LEANDER" Class

SUBMARINES

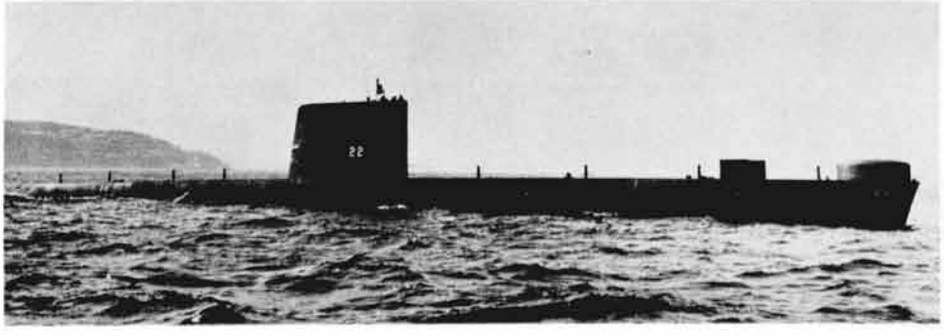
Note: In late 1980 an order for two submarines was placed in West Germany.

2 BRITISH "OBERON" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
O'BRIEN	22	Scott-Lithgow	17 Jan 1971	21 Dec 1972	Apr 1976
HYATT (ex-*Condell*)	23	Scott-Lithgow	10 Jan 1972	26 Sep 1973	27 Sep 1976

Displacement, tons: 1 610 standard; 2 030 surfaced; 2 410 dived
Dimensions, feet (metres): 295·2 × 26·5 × 18·1 *(90 × 8·1 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)* (6 bow, 2 stern)
Main machinery: 2 diesels 3 680 bhp; 2 electric motors; 6 000 shp; 2 shafts
Speed, knots: 12 surfaced; 17 dived

Ordered from Scott's Shipbuilding & Engineering Co Ltd, Greenock, late 1969. Both suffered delays in fitting out due to re-cabling and a minor explosion in *Hyatt* in January 1976. Original completion was due in July 1974 and April 1975 (see commissioning dates above). *O'Brien* arrived in Chile July 1976, *Hyatt* February 1977. *Hyatt* completed on 31 August 1976.



O'BRIEN *1979, Chilean Navy*

1 Ex-US "BALAO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SIMPSON (ex-USS *Spot*, SS 413)	21	Mare Island Navy Yard	1943	20 May 1944	3 Aug 1944

Displacement, tons: 1 816 surfaced; 2 425 dived
Dimensions, feet (metres): 311·6 × 27 × 17 *(95 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in *(533 mm)* (6 bow, 4 stern)
Gun: 1—5 in/25
Main machinery: 4 General Motors diesels; 6 500 hp; 2 electric motors; 4 610 bhp
Speed, knots: 20 surfaced; 10 dived
Complement: 80

Transferred end of 1961. Paid off 1975. Reactivated 1977 after a major refit.

SIMPSON *1979, Chilean Navy*

CRUISERS

1 Ex-SWEDISH "GOTA LEJON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
LATORRE (ex-*Gota Lejon*)	04	Eriksberg Mekaniska Verkstad, Göteborg	27 Sep 1943	17 Nov 1945	15 Dec 1947

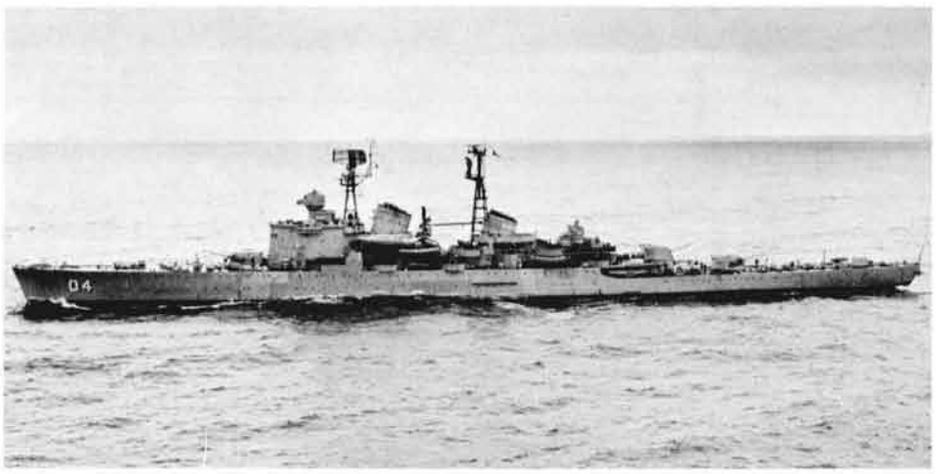
Displacement, tons: 8 200 standard; 9 200 full load
Dimensions, feet (metres): 597 × 54 × 21·5 *(182 × 16·5 × 6·6)*
Guns: 7—6 in *(150 mm)*/53 (1 triple fwd, 2 twin aft) 4—57 mm; 11—40 mm
Torpedo tubes: 6—21 in
Armour: 3 in—5 in *(75—125 mm)*
Main engines: 2 sets De Laval geared turbines; 100 000 shp; 2 shafts
Boilers: 4 Swedish 4-drum type
Speed, knots: 33
Complement: 610

Radar control arrangements were installed for 6-in guns. Fitted for minelaying with a capacity of 120 mines. Reconstructed in 1951-52, modernised in 1958, with new radar, 57 mm guns etc.

Gunnery: The 6-in guns are automatic weapons with an elevation of 70 degrees. Originally ordered for Royal Netherland Navy's "De Zeven Provincien" class in 1938.

Radar: Search: LW-03, Type 277.
Tactical: Type 293.
Fire control: I band.

Transfer: Purchased by Chile from Sweden July 1971. Commissioned in Chilean Navy on 18 September 1971.



LATORRE *1979, Chilean Navy*

2 Ex-US "BROOKLYN" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
O'HIGGINS (ex-USS *Brooklyn* CL 40)	02	New York Navy Yard	12 Mar 1935	30 Nov 1936	30 Sep 1937
PRAT (ex-USS *Nashville* CL 43)	03	New York S.B. Corporation	24 Jan 1935	2 Oct 1937	6 June 1938

Displacement, tons: 10 000 standard; 13 500 full load
Dimensions, feet (metres): 608·3 × 69 × 24 *(185·4 × 21 × 7·3)*
Aircraft: 1 Bell helicopter
Guns: 15—6 in *(152 mm)*/47, triple Mk 16; 8—5 in *(127 mm)*/25, single Mk 27; 28—40 mm/60, (4 quad and 6 twin Mk 2 and Mk 1); 24—20 mm/80 (single and twin)
Armour, inches (mm):
Belt 4—1½ *(102—38)*;
Decks 3—2 *(76—51)*;
Turrets 5—3 *(127—76)*;
C.T. 8 in *(203)*
Main engines: Parsons geared turbines 100 000 shp; 4 shafts
Boilers: 8 Babcock & Wilcox Express type
Oil fuel, tons: 2 100
Speed, knots: 32·5
Range, miles: 7 600 at 15 knots
Complement: 888 to 975 (peace)

Former cruisers of the US "Brooklyn" Class. Purchased from the USA in 1951 at a price representing 10 per cent of original cost ($37 million) plus the expense of reconditioning. Again refitted in USA 1957-58.

Class: *O'Higgins* (ex-USS *Brooklyn*) was damaged by grounding on 12 August 1974. She was subsequently used as an alongside accommodation ship and was no longer considered operational. However, after a very expensive refit in 1977/78 she has been recommissioned.

Fire control: Two Mk 34 directors for 6-in armament.

O'HIGGINS *1979, Chilean Navy*

Hangar: The hangar in the hull right aft could accommodate six aircraft if necessary together with engine spares and duplicate parts, though four aircraft was the normal capacity. Above the hangar two catapults were mounted as far outboard as possible, and a revolving crane was placed at the stern extremity overhanging the aircraft hatch.
Radar: Search: SPS 12.
Tactical: SPS 10.

DESTROYERS

2 Ex-US "FLETCHER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BLANCO ENCALADA (ex-USS *Wadleigh* DD 689)	14	Bath Iron Works Corporation, Bath, Maine	Mar 1943	7 Aug 1943	19 Oct 1943
COCHRANE (ex-USS *Rooks* DD 804)	15	Todd Pacific Shipyards	Jan 1944	6 June 1944	2 Sep 1944

Displacement, tons: 3 050 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18 *(110·5 × 12 × 5·5)*
Guns: 4—5 in *(127 mm)*/38; 6—3 in *(76 mm)*/50
Torpedo tubes: 5—21 in *(533 mm)* (quin)
A/S weapons: 2 Hedgehogs; 2 side launching torpedo racks; 1 DC rack; 6 "K" DCTs
Main engines: 2 Westinghouse geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 35
Oil fuel, tons: 650
Range, miles: 6 000 at 15 knots; 1 260 at 30 knots
Complement: 250 (14 officers, 236 men). Accommodation for 324 (24 officers, 300 men)

Transferred to Chile under the Military Aid Programme in 1963. Three more destroyers were scheduled for transfer from the US Navy to the Chilean Navy under a new transfer law signed by the President of the USA in 1966. The ships were to have been refitted and modernised and adapted to Chilean requirements before transfer to the new flag, but the four frigates of the US "Charles Lawrence" class were transferred instead.

Radar: Search: SPS 6.
Tactical: SPS 10.
Fire control: Mk 37 director; Mk 56 director with Mk 35 radar; two Mk 63 directors for 3-in guns.

COCHRANE *1979, Chilean Navy*

2 "ALMIRANTE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ALMIRANTE RIVEROS	18	Vickers-Armstrong Ltd, Barrow	12 Apr 1957	12 Dec 1958	31 Dec 1960
ALMIRANTE WILLIAMS	19	Vickers-Armstrong Ltd, Barrow	20 June 1956	5 May 1958	26 Mar 1960

Displacement, tons: 2 730 standard; 3 300 full load
Dimensions, feet (metres): 402 × 43 × 13·3 *(122·5 × 13·1 × 4)*
Missiles: SSM: 4 Exocet (single cells);
SAM: 2 Seacat (quad launchers with 16 missiles)
Guns: 4—4 in *(102 mm)*/60 (single Mk(N)R);
4—40 mm/70 single Bofors L70
A/S weapons: 2 Squid 3-barrelled DC mortars;
6 (2 triple) Mk 32 torpedo tubes (Mk 44 torpedoes)
Main engines: Parsons Pametrada geared turbines;
54 000 shp; 2 shafts
Boilers: 2 Babcock & Wilcox
Speed, knots: 34·5
Range, miles: 6 000 at 16 knots
Complement: 266

Ordered in May 1955. Layout and general arrangements are conventional. Bunks fitted for entire crew. Both modernised by Swan Hunter in co-operation with Plessey, *Almirante Williams* in 1971-74 and *Almirante Riveros* in 1973-75.

Electrical: The electrical system is on alternating current. Galleys are all electric. There is widespread use of fluorescent lighting. Degaussing cables are fitted.

Gunnery: The 4-in guns are in four single mountings, two superimposed forward and two aft. These mountings are unique. They are automatic with a range of 12 500 yards *(11 430 metres)* and an elevation of 75 degrees.

Missiles: British Seacat surface-to-air installations were fitted at the Chilean Navy Yard at Talcahuano in 1964. Exocet MM 38 fitted during modernisations.

Operational: The operations room and similar spaces are air-conditioned. Twin rudders. Ventilation and heating system designed to suit Chilean conditions, extending from the tropics to the Antarctic.

Radar: Plessey AWS-I and Target Indication radar with AIO autonomous displays.

ALMIRANTE RIVEROS *1976, Swan Hunter*

ALMIRANTE WILLIAMS *Chilean Navy*

2 Ex-US "ALLEN M. SUMNER FRAM II" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MINISTRO ZENTENO (ex-USS *Charles S. Sperry*, DD 697)	16	Todd (Pacific) Shipyards	1944	30 Sep 1944	26 Dec 1944
MINISTRO PORTALES (ex-USS *Douglas H. Fox*, DD 779)	17	Federal S.B. and D.D. Co	1943	13 Mar 1944	17 May 1944

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19
(114·8 × 12·4 × 5·8)
Aircraft: 1 helicopter
Guns: 6—5 in *(127 mm)*/38 twin Mk 38
A/S weapons: 2 triple Mk 32 launchers; 2 Hedgehogs
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 34
Range, miles: 4 500 at 16 knots
Complement: 274

Transferred on 8 January 1974 by sale.

Radar: Search: SPS 37 *(Zenteno)*, SPS 40 *(Portales)*.
Tactical: SPS 10.
Fire control: Mk 37 director.

Sonar: SQS 40. VDS (in *Zenteno*).

MINISTRO PORTALES *1979, Chilean Navy*

MINISTRO ZENTENO *1979, Chilean Navy*

FRIGATES

2 BRITISH "LEANDER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
CONDELL	06	Yarrow & Co Ltd	5 June 1971	12 June 1972	21 Dec 1973
ALMIRANTE LYNCH	07	Yarrow & Co Ltd	6 Dec 1971	6 Dec 1972	25 May 1974

Displacement, tons: 2 500 standard; 2 962 full load
Dimensions, feet (metres): 372 × 43 × 18 (screws)
(113·4 × 13·1 × 5·5)
Aircraft: 1 light helicopter
Missiles: SSM; 4 Exocet (single cells);
SAM; Seacat (1 quad launcher with 16 missiles)
Guns: 2—4·5 in *(115 mm)*/45 twin Mk 6; 2—20 mm/70
A/S weapons: 6 (2 triple) Mk 32 torpedo tubes
Main engines: 2 geared turbines; 30 000 shp
Boilers: 2
Speed, knots: 29
Range, miles: 4 500 at 12 knots
Complement: 263

Ordered from Yarrow & Co Ltd, Scotstoun in the modernisation programme of the Chilean Navy. Until the Swedish cruiser was acquired, *Condell*, laid down on 5 June 1971, was to have been named *Latorre*. Renamed 1971. Both arrived in Chilean waters by February 1975.

Appearance: Have slightly taller foremasts than British "Leander" class. No Limbo or VDS.

Missiles: The Exocet launchers are placed on the quarter-deck thus, as opposed to the British conversion, allowing the retention of the 4·5-in turret.

ALMIRANTE LYNCH *1979, Chilean Navy*

Radar: Surveillance, target indication: Type 992Q.
Air search: Type 965.
Navigation: Type 975.
Seacat/Gunnery: GWS 22/MRS3.

Sonar: Type 162, 170 and 177.

3 Ex-US "CHARLES LAWRENCE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
SERRANO (ex-USS *Odum*, APD 71, ex-DE 670)	26	Consolidated Steel, Orange	15 Oct 1943	19 Jan 1944	12 Jan 1945
ORELLA (ex-USS *Jack C. Robinson*, APD 72, ex-DE 671)	27	Consolidated Steel, Orange	10 Nov 1943	8 Jan 1944	2 Feb 1945
URIBE (ex-USS *Daniel Griffin*, APD 38, ex-DE 54)	29	Bethlehem, Hingham	7 Sep 1942	25 Feb 1943	9 June 1943

Displacement, tons: 1 400 standard; 2 130 full load
Dimensions, feet (metres): 306 × 37 × 12·6
(93·3 × 11·3 × 3·8)
Guns: 1—5 in *(127 mm)*/38 (single Mk 30);
4—40 mm/60 (twins Mk 1)
A/S weapons: 2 Hedgehogs (some); 2 DC racks
Main engines: GE turbo-electric; 2 turbines; 12 000 hp;
2 generators 4 500 kW each; 2 shafts = 23·6 knots
Boilers: 2 Foster Wheeler "D" type
Range, miles: 5 000 at 15 knots; 2 000 at 23 knots
Complement: 209

These former high speed transports (APD) were purchased from the USA, transferred at Orange, Texas on 25 November 1966 (first two) and Norfolk Va on 1 December 1966 *(Uribe)*. They have been modernised. *Riquelme* was also transferred but was used for provision of spare parts. Deleted 1973. Carry two LCUs.

Radar: Combined search: SPS-4.
Navigation: commercial (no gunnery control by radar).

SERRANO *1979, Chilean Navy*

PATROL FORCES

2 Ex-US "SOTOYOMO" CLASS

Name	No.	Builders	Commissioned
LIENTUR (ex-USS *ATA 177*)	60	Levingstone S.B. Co, Orange	2 Sep 1944
LAUTARO (ex-USS *ATA 122*)	62	Levingstone S.B. Co, Orange	10 June 1943

Displacement, tons: 534 standard; 835 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Guns: 1—3 in *(76 mm)*/50; 2—20 mm
Main engines: General Motors diesel-electric; 1 500 shp = 12·5 knots
Oil fuel, tons: 187
Complement: 33

Lautaro launched on 27 November 1942 and *Lientur* on 5 June 1944. Originally ocean rescue tugs (ATRs), transferred to the Chilean Navy and reclassified as patrol vessels.

LAUTARO *1979, Chilean Navy*

1 Ex-US "CHEROKEE" CLASS

Name	No.	Builders	Commissioned
SERGENTO ALDEA (ex-USS *Arikara*, ATF 98)	63	Charleston S.B. & D.D. Co	5 Jan 1944

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Gun: 1—3 in *(76 mm)*/50; 2—20 mm
Main engines: Diesel-electric; 1 shaft; 3 000 bhp = 15 knots
Complement: 85

Launched on 22 June 1943. Transferred on 1 July 1971 by lease.

SERGENTO ALDEA *1979, Chilean Navy*

LIGHT FORCES

2 + (2) ISRAELI "SAAR IV" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
CASMA (ex-*Romah*)	—	Haifa Shipyard	Mar 1974
CHIPANA	—	Haifa Shipyard	—

Displacement, tons: 415 standard; 450 full load
Dimensions, feet (metres): 190·6 × 25 × 8 *(58 × 7·8 × 2·4)*
Missiles: SSM; 6 Gabriel
Guns: 2—76 mm/62 Single Compact; 2—20 mm Oerlikon
Main engines: 4 Maybach (MTU) diesels; 10 680 shp; 2 shafts
Speed, knots: 32
Range, miles: 1 650 at 30 knots; 4 000 at 17·5 knots
Complement: 45

First craft transferred late 1979 for refit and deployment to Beagle Channel. Two or three more to be acquired, probably by new construction although building yard not reported.

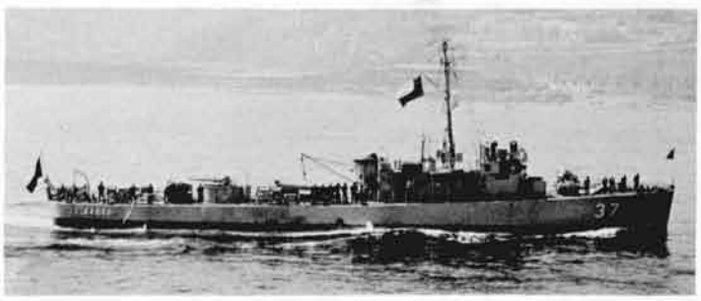
"SAAR IV" Class *1974, Michael D. J. Lennon*

US "PC-1638" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
PAPUDO (ex-US *PC 1646*)	37	Asmar, Talcahuano	27 Nov 1971

Displacement, tons: 412 full load
Dimensions, feet (metres): 173·7 × 23 × 10·2 *(53 × 7 × 3·1)*
Guns: 1—40 mm; 4—20 mm (twins)
A/S weapons: 1 Mk 15 Trainable Hedgehog; 2 "K" DCTs; 4 DC racks
Main engines: 2 diesels; 2 shafts; 2 800 bhp = 19 knots
Complement: 69 (4 officers, 65 men)

Of similar design to the Turkish "Hisar" class built to the US PC plan.



PAPUDO *1979, Chilean Navy*

4 "BARCELO" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 134 full load
Dimensions, feet (metres): 118·7 × 19 × 6·2 *(36·2 × 5·8 × 1·9)*
Guns: 1—40 mm Breda Bofors 350; 2—20 mm Oerlikon; 2—12·7 mm
Torpedo tubes: Provision for 2—21 in *(533 mm)*
Main engines: 2 MTU MD-16V diesels; 5 760 bhp; 2 shafts
Speed, knots: 36 maximum; 20 cruising
Range, miles: 1 200 at 17 knots
Complement: 19

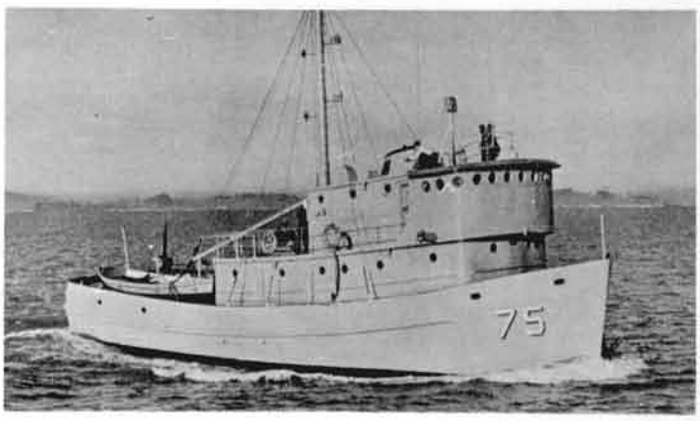
Ordered from Bazán, La Carraca in 1978. In its Spanish form the 20 mm guns and torpedo tubes can be replaced by two or four SSMs.

"BARCELO" Class *1976, Bazán*

2 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
MARINERO FUENTEALBA	75	Asmar, Talcahuano	22 July 1966
CABO ODGER	76	Asmar, Talcahuano	21 Apr 1967

Displacement, tons: 215
Dimensions, feet (metres): 80 × 21 × 9 *(24·4 × 6·4 × 2·7)*
Guns: 1—20 mm; 3—12·7 mm MGs
Main engines: 1 Cummins diesel 340 hp = 9 knots
Range, miles: 2 600 at 9 knots
Complement: 19



MARINERO FUENTEALBA *1979, Chilean Navy*

4 LÜRSSEN TYPE (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
GUACOLDA	80	Bazan, Cadiz	30 July 1965
FRESIA	81	Bazan, Cadiz	9 Dec 1965
QUIDORA	82	Bazan, Cadiz	1966
TEGUALDA	83	Bazan, Cadiz	1966

Displacement, tons: 134
Dimensions, feet (metres): 118·1 × 18·4 × 7·2 *(36 × 5·6 × 2·2)*
Guns: 2—40 mm
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: Diesels; 2 shafts; 4 800 bhp = 32 knots
Range, miles: 1 500 at 15 knots
Complement: 20

Built to West German Lürssen design from 1963 to 1966. First launched 1964.

QUIDORA *1979, Chilean Navy*

20 COASTAL PATROL CRAFT

PILLAN	**LLAIMA**
TRONADOR	**ANTUCO**
RANO KAO	**OSORNO**
VILLARRICA	**CHOSHUENCO**
CORCOVADO	**COPAHUE** +10

Dimensions, feet (metres): 61 × 17·3 × 5·6 *(18·6 × 5·3 × 1·7)*
Missiles: SSM; small missiles in second group
Guns: 2—20 mm
A/S weapons: DCs
Speed, knots: 30

Built by Maclaren, Niteroi, Brazil. First ten ordered 1977 with second ten ordered 1979. First ten commissioned in 1979; second group commissioned from August 1980.

2 COASTAL PATROL CRAFT

Two 32 ft Equity Standard Craft delivered in 1968. Diesel; 400 hp = 35 knots.

AMPHIBIOUS FORCES

2 "BATRAL" CLASS (LIGHT TRANSPORTS)

Name	*No.*	*Builders*	*Commissioned*
RANCAGUA	—	Asmar, Talcahuano	1981
MAIPO	—	Asmar, Talcahuano	1981

Displacement, tons: 750 standard; 1 409 full load
Dimensions, feet (metres): 262·4 × 42·6 × 7·9 *(80 × 13 × 2·4)*
Guns: 2—40 mm; 1—81 mm mortar
Main engines: 2 diesels; 2 shafts (cp propellers); 3 600 hp
Speed, knots: 16
Range, miles: 4 500 at 13 knots
Complement: 47

Laid down in 1980 to standard French design.

"BATRAL" Class *1977, J. Y. Robert*

2 Ex-US "511-1152" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
COMANDANTE HEMMERDINGER (ex-USS *New London County*, LST 1066)	88	Bethlehem Steel, Hingham, Mass	20 Mar 1945
COMANDANTE ARAYA (ex-USS *Nye County*, LST 1067)	89	Bethlehem Steel, Hingham, Mass	24 Mar 1945

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 4·3)*
Guns: Fitted for 8—40 mm
Main engines: General Motors diesels; 1 700 shp; 2 shafts = 11·6 knots
Complement: Approx 110

Transferred on 29 August 1973. After various employments both are now available for amphibious duties.

COMANDANTE HEMMERDINGER *1979, Chilean Navy*

11 Ex-US LCVPs

Transferred in 1960.

2 CHILEAN LANDING CRAFT

Name	*No.*	*Builders*	*Commissioned*
ELICURA	90	Talcahuano	10 Dec 1968
OROMPELLO	94	Dade Dry Dock Co, Miami	15 Sep 1964

Displacement, tons: 290 light; 750 full load
Dimensions, feet (metres): 145 × 34 × 12·8 *(44·2 × 10·4 × 3·9)*
Guns: 3—20 mm *(Elicura)*
Main engines: Diesels; 2 shafts; 900 bhp = 10·5 knots
Oil fuel (tons): 77
Range, miles: 2 900 at 9 knots
Complement: 20

Orompello was built for the Chilean Government in Miami, *Elicura* was launched on 21 April 1967. Two of similar class operated by Chilean Shipping Co.

OROMPELLO *1971, Chilean Navy*

SURVEY SHIP

1 Ex-US "CHEROKEE" CLASS

Name	*No.*	*Builders*	*Commissioned*
YELCHO (ex-USS *Tekesta*, ATF 93)	64	Commercial Iron Works, Portland, Oregon	16 Aug 1943

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Guns: 1—3 in *(76 mm)*; 2—20 mm (singles)
Main engines: Diesel-electric; 4 diesels; 1 shaft; 3 000 bhp = 15 knots
Complement: 85

Fitted with powerful pumps and other salvage equipment. *Yelcho* was laid down on 7 September 1942, launched on 20 March 1943 and loaned to Chile by the USA on 15 May 1960, having since been employed as Antarctic research ship and surveying vessel.

YELCHO *1979, Chilean Navy*

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
ESMERALDA (ex-*Don John de Austria*)	43	Echevarietta, Cadiz	1952

Displacement, tons: 3 040 standard; 3 673 full load
Dimensions, feet (metres): 308·8 × 43 × 23 *(94·1 × 13·1 ×7)*
Guns: 2—57 mm (saluting)
Sail area: Total 26 910 sq ft
Main engine: 1 Fiat auxiliary diesel; 1 shaft; 1 400 bhp = 11 knots
Range, miles: 8 000 at 8 knots
Complement: 271 plus 80 cadets

Four-masted schooner originally intended for the Spanish Navy. Transferred to Chile on 12 May 1953. Near sister ship of *Juan Sebastian de Elcano* in the Spanish Navy. Replaced transport *Presidente Pinto* as training ship. Refitted Saldanha Bay, South Africa, 1977.

ESMERALDA *1977, Chilean Navy*

TRANSPORTS

Name	*No.*	*Builders*	*Commissioned*
AQUILES (ex-*Tjaldur*)	47	Aalborg Vaerft, Denmark	1953

Measurement, tons: 2 660 registered; 1 462 net; 1 395 deadweight
Dimensions, feet (metres): 288 × 44 × 17 *(87·8 × 13·4 × 5·2)*
Gun: 1—40 mm
Main engine: 1 Burmeister & Wain diesel; 3 600 bhp = 16 knots
Range, miles: 5 500 at 16 knots
Complement: 60 crew plus 447 troops

Ex-Danish M/V *Tjaldur* bought by Chile in 1967.

AQUILES *1976, Chilean Navy*

Name	*No.*	*Builders*	*Commissioned*
PILOTO PARDO	45	Haarlemsche Scheepsbouw, Netherlands	1959

Displacement, tons: 1 250 light; 2 000 standard; 3 000 full load
Dimensions, feet (metres): 269 × 39 × 15 *(82 × 11·9 × 4·6)*
Aircraft: 1 helicopter
Guns: 1—101 mm/50; 2—20 mm
Main engines: 2 diesel-electric; 2 000 hp = 14 knots
Range, miles: 6 000 at 10 knots
Complement: 44 (plus 24 passengers)

Antarctic patrol ship, transport and research vessel with reinforced hull to navigate in ice. Launched on 11 June 1958.

PILOTO PARDO *1979, Chilean Navy*

Name	*No.*	*Builders*	*Commissioned*
METEORO	110	Asmar, Talcahuano	1967
GRUMETE PEREZ HUEMEL	112	Asmar, Talcahuano	1975

Displacement, tons: 205
Main engine: Diesel = 8 knots

Capacity 220 passengers.

Name	*No.*	*Builders*	*Commissioned*
CIRUJANO VIDELA	111	Asmar, Talcahuano	1964

Displacement, tons: 140
Dimensions, feet (metres): 101·7 × 21·3 × 6·6 *(31 × 6·5 × 2)*
Main engine: Diesel; 700 hp = 14 knots

Hospital and dental facilities are fitted. A modified version of US PGM 59 design with larger superstructure and less power.

TANKERS

NEW CONSTRUCTION

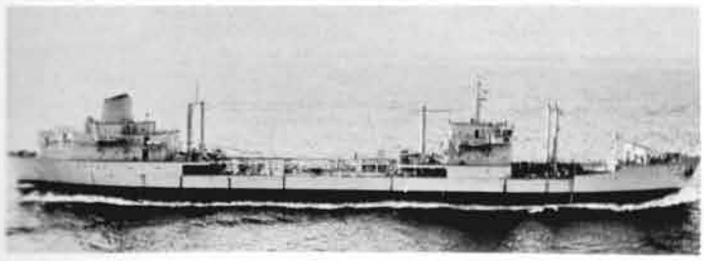
Measurement, tons: 15 000 gross; 19 500 deadweight
Dimensions, feet (metres): 579·3 × 83·7 × — *(176·7 × 25·5 × —)*
Main engines: 18 300 hp

Ordered late 1976 from Asmar, Talcahuano. May have been deferred or cancelled.

Name	*No.*	*Builders*	*Commissioned*
ARAUCANO	53	Burmeister & Wain, Copenhagen	10 Jan 1967

Displacement, tons: 17 300
Dimensions, feet (metres): 497·6 × 74·9 × 28·8 *(151·7 × 22·8 × 8·8)*
Guns: Fitted for 8—40 mm (twins)
Main engine: Burmeister and Wain diesel; 10 800 bhp = 15·5 knots (17 on trials)
Range, miles: 12 000 at 15·5 knots

Launched on 21 June 1966.



ARAUCANO *1979, Chilean Navy*

1 Ex-US "PATAPSCO" CLASS

Name	*No.*	*Builders*	*Commissioned*
BEAGLE (ex-USS *Genesee*, AOG 8)	54	Cargill Inc, Savage, Minn.	27 May 1944

Displacement, tons: 4 570 full load
Dimensions, feet (metres): 310·8 × 48·5 × 16 *(94·8 × 14·8 × 4·9)*
Guns: 2—3 in/50; 4—20 mm
Main engines: Diesel-electric; 2 shafts; 3 840 hp = 15 knots
Range, miles: 4 740 at 15 knots
Complement: 95

Transferred on loan on 5 July 1972.

BEAGLE *1979, Chilean Navy*

SUBMARINE SUPPORT VESSEL

Name	*No.*	*Builders*	*Commissioned*
ANGAMOS (ex-M/V *Puerto Montt*, ex-M/V *Kobenhavn*)	70	Orenst & Koppel, Germany	1966

Measurement, tons: 4 616 gross
Dimensions, feet (metres): 308·2 × 53·2 × 13·6 *(93·92 × 16·20 × 4·15)*
Main engines: 2 Lind-Pielstick diesels; 6 500 hp = 17 knots

Acquired from Chilean state shipping company early 1977 for conversion to submarine support vessel. Entered service early 1979. Former Chilean and Danish ferryboat.

TUGS

Name	*No.*	*Builders*	*Commissioned*
COLOCOLO	73	Bow, McLachlan & Co, Paisley	1930

Displacement, tons: 790
Dimensions, feet (metres): 126·5 × 27 × 12 *(38·6 × 8·2 × 3·7)*
Main engines: Triple expansion; 1 050 ihp = 11 knots
Oil fuel, tons: 155

Formerly classed as Coast Guard vessel. Rebuilt in 1962-63. Last of class of five.

Name	*No.*	*Builders*	*Commissioned*
GALVEZ	—	Southern Shipbuilders Ltd, Faversham, England	June 1975

Measurement, tons: 112 gross
Dimensions, feet (metres): 83·6 × 24 × 9·2 *(25·5 × 7·3 × 2·8)*

Dockyard tug of Asmar, Talcahuano.

REYES 120 **CORTEZ** 128

FLOATING DOCKS

2 Ex-US "ARD-12" CLASS

INGENIERO MERY (ex-US *ARD 25*) 131
MUTILLA (ex-US *ARD 32*) 132

Displacement, tons: 5 200
Capacity, tons: 3 000
Dimensions, feet (metres): 492 × 84 × 5·7 to 33·2 *(150 × 25·6 × 1·7 to 10·1)*

Mutilla leased to Chile on 15 December 1960. *Ingeniero Mery* transferred on 20 April 1973. Both at Asmar yard, Talcahuano.

MANTEROLA

Capacity, tons: 1 000
Dimensions, feet (metres): 216 × 42 × 15 *(66 × 12·8 × 4·6)*

Built in 1908. In use at Asmar, Talcahuano.

Two Floating Cranes of 30 and 180 tons lift are at Talcahuano.

Notes: (a) *Huascar*, completed 1865, previously Peruvian, now harbour flagship at Talcahuano.
(b) *Castor* also listed.

CHINA, People's Republic

Note: Chinese names are transliterated in Pin Yin.

Administration

Minister of National Defence:
Geng Biao

Headquarters' Appointments

Commander-in-Chief of the Navy:
Ye Fei
Deputy Commander-in-Chief and 1st Political Commissar:
Liu Daosheng

Fleet Commanders

North Sea Fleet:
Deng Zhaoxiang
East Sea Fleet:
Zheng Guozhong
South Sea Fleet:
Fu Jize

Diplomatic Representation

Defence and Naval Attaché in London:
Zhang Wutang

Personnel

(a) 1981: 240 000 officers and men, plus 30 000 naval air force and 28 000 marines.
(b) 6 years' national service.

Training

Carried out at following schools/academies:
Shanghai:
- Officer Training School
- Naval Aviation School
- Coastal Artillery School
- Supply School
- Radar School
- School of Naval Architecture
- Fleet Training Centre (Ratings)

Luda:
- Naval Academy
- Mining School

Nanjing:
- War College
- Ratings Training School

Qingdao:
- Naval Aviation School
- Main Ratings Training School
- Submarine School

Lushun:
- Submarine School

Yulin:
- Submarine School

Dachang:
- Naval Aviation Training Base

Mudanjiang:
- Naval Aviation School

Minor ratings' schools at Weihai Wei, An Jing, Fuzhou, Zhushan and Huangzhou.

Bases

North Sea Fleet: Qingdao (HQ), Lushun, Weihai Wei, Qingshan, Luda, Huludao, Xiaopingdao
East Sea Fleet: Shanghai (HQ), Zhoushan, Zhenjiangguan, Wusong, Xinxiang, Wenzhou, Sanduao
South Sea Fleet: Zhanjiang (HQ), Yulin, Haikou, Huangfu, Guangzhou (Canton), Shantou
(The fleet is split with the main emphasis on the North Sea Fleet).

General

While studying this section it must be remembered that not only is there a steady building programme of all classes in the modernised Chinese yards but also the Chinese have an advanced nuclear and missile capability. This combination will make the Chinese navy, already more than four times as strong in manpower as the Royal Navy, an important element in the future balance of power East of Suez.
The change in relations with Western countries over the last few years has brought about considerable interest both in the acquisition of Western ships and equipment as well as maintenance and refit methods. With a very powerful Soviet Pacific Fleet next door the deficiencies in the Chinese navy which could be met with outside assistance are in the provision of more powerful missile-armed surface ships, modern submarine designs, modern mine-warfare craft and hovercraft. Weapon systems and electronic equipment are especially in need of up-dating.

Naval Radars

Code Name	*Frequency*	*Function*	*Fitting*
Ball End	E/F	Surface Warning	Kaibokan and other escorts
Ball Gun	E/F	Surface Warning	Kronstadt, T 43, Jiangnan
Cross Bird	G	Early Warning	Gordy
Cross Slot		Early Warning	Luda, Zhangqiang
Decca 707	I	Surface Search	Corvettes, Light Forces
Drum Tilt	I	Armament Control	Osa
High Pole A	G	IFF	General
Mina	I	Fire Control	Gordy 130mm
Neptun	I	Navigation	General
Post Lamp	I	Fire Control	Luda
Pot Head	I	Surface Search	Hainan, Kronstadt, Light Forces
Skinhead	I	Surface Search	Light Forces
Ski Pole	G	IFF	Gordy
Slim Net	E/F	Surface Warning	Riga
Square Tie	I	Fire Control	Gordy, Luda, Riga, Osa
Sun Visor	I	Fire Control	Riga
Wok Won	I	Fire Control	Jiangnan

DELETIONS

1976 10 "P4" class, 1 "Shandong" class, 10 "Shantou" class, 5 "Whangpu" class, 4 ex-US YMS, 2 ex-Japanese AMS.
1977 20 "P4" class, 10 "Shantou" class, 10 "Whangpu" class.
1978 10 "Shanghai I" class, 5 "P4" class, 5 "Shantou" class, 5 "Whangpu" class.
1979 50 "Shanghai" class, 5 "Shantou" class, *Juian, Zhaoan, Linyi* (escorts)
(Where other alterations of numbers occur this is as a result of more up-to-date information).

Naval Air Force

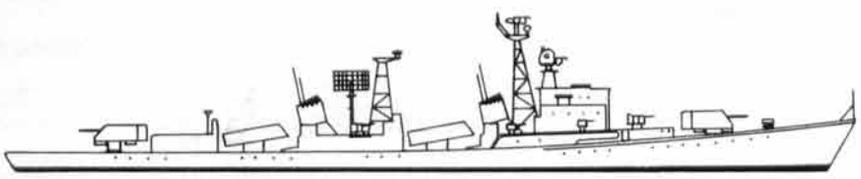
With 30 000 officers and men and over 700 aircraft, this is a considerable land-based naval air force. The equipment includes 300 F-6 (MiG 19) and 50 Fantan (an up-graded version of F-6), 130 B-5 (Il 28) as well as a reported force consisting of F-4 (MiG 17), B-6 (Tu-16, Badger), Bat (Tu-2), the old Be 6 (Madge) flying-boats and 50 H-5 (Mi-4 Hound) helicopters. With SA-2 SAM and a number of transport and communication aircraft this is primarily a defensive and ASW force.

Strength of the Fleet

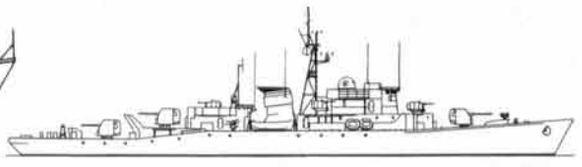
Type	*Active*	*Building*
Fleet Submarines	2	?
Missile Firing Submarines	1	?1
Patrol Submarines	92	9
Destroyers (DDG)	12	6
Frigates	16	?2
Fast Attack Craft (Missile)	188	12
Fast Attack Craft (Gun)	376	?10
Fast Attack Craft (Torpedo)	255	?10
Fast Attack Craft (Patrol)	24	4
Large Patrol Craft	21	—
Coastal Patrol Craft	7	?
River Patrol Craft	117	?
Minesweepers (Ocean)	23	—
Mine Warfare Craft	80	—
Landing Ships (LST)	15	—
LSMs	16	—
LSILs	6	—
LCTs	19	—
LCMs—LCUs	450	—
Support Ships	9	—
Salvage Ships	3	—
Survey & Research Ships	25	2
Supply Ships	29	—
Tankers (large)	3	—
Tankers (small)	22	—
Boom Defence Vessels	6	—
Icebreakers	2	—
Tugs	39	—
Escorts (old)	12	—
Repair Ships	2	—
Misc. Small Craft	375	—

Mercantile Marine

Lloyd's Register of Shipping:
955 vessels of 6 873 608 tons gross



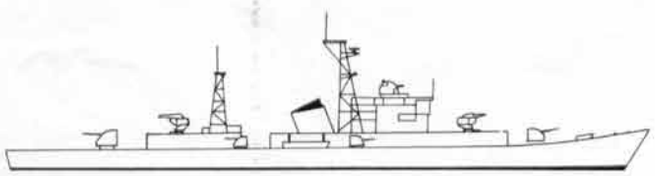
"LUDA" Class



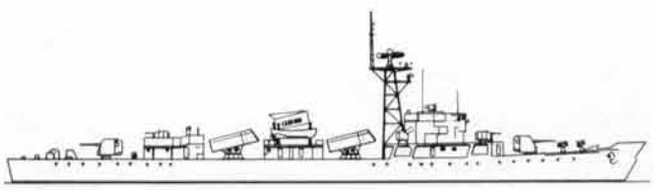
"JIANGNAN" Class

"ANSHAN" Class

"CHENGDU" Class



"JIANGDONG" Class



"JIANGHU" Class

SUBMARINES

BALLISTIC MISSILE SUBMARINES (NUCLEAR)

The construction of nuclear submarines combined with the known Chinese capability to build liquid-fuelled rockets of the MRBM, IRBM and ICBM types and the completion of a solid-propellant factory, suggests that the forecast of a Chinese ballistic-missile nuclear submarine (SSBN) in the 1980s may not be out of the question. It is reported that one SSBN was laid down in 1978 with probable launch date of late 1980.

2 "HAN" CLASS (SSN)

1701 1702

These are the first possible Chinese nuclear submarines. With an Albacore hull the first of this class was probably laid down in 1971-72. Her construction may have been delayed as problems were encountered with the power plant, but she appears to have run trials in 1974. Second "Han" class is reported as completed in 1977.

2 "MING" CLASS (PATROL TYPE)

232 233

Displacement, tons: Possibly about 1 500 surfaced; 1 900 dived
Length, feet: Possibly about 250
Armament: Possibly 6—21 in *(533 mm)* torpedo tubes
Main machinery: Probably diesels and main motors

First believed to have been laid down in 1971-72 which would give an operational date around late 1974 or 1975.

1 SOVIET "GOLF" CLASS (BALLISTIC MISSILE TYPE)

200

Displacement, tons: 2 350 surfaced; 2 850 dived
Dimensions, feet (metres): 321·4 × 27·9 × 21 *(98 × 8·5 × 6·4)*
Missile launchers: 3 vertical tubes
Torpedo tubes: 6—21 in *(533 mm)* (bow) (12 torpedoes)
Main machinery: 3 diesels; 6 000 hp; 3 shafts
3 electric motors; 12 000 hp
Speed, knots: 17 surfaced; 14 dived
Range, miles: 22 700 surfaced; cruising
Complement: 86 (12 officers, 74 men)

Ballistic missile submarine similar to the Soviet "Golf" class. Built at Luda in 1964. The missile tubes are fitted in the conning tower. It is not known whether this boat has been fitted with missiles, although it is possible in the future and well within Chinese technical capability (see note above concerning SLBMs).

"GOLF" Class *1972*

68 + 9 Ex-SOVIET and CHINESE "ROMEO" CLASS (PATROL TYPE)

126	**153**	**227-9**	**281-3**
140	**172**	**245**	**+ 44**
142	**176**	**248-9**	
143	**209-212**	**267-270**	

Displacement, tons: 1 330 surfaced; 1 700 dived
Dimensions, feet (metres): 251·9 × 23·9 × 18 *(76·8 × 7·3 × 5·5)*
Torpedo tubes: 6—21 in *(533 mm)* (bow); 2—21 in (stern)
(14 torpedoes or 28 mines)
Main machinery: 2 diesels; 4 000 hp;
2 electric motors; total 4 000 hp; 2 shafts
Speed, knots: 15 surfaced; 13 dived
Range, miles: 16 000 at 10 knots (surfaced)
Complement: 53

The Chinese continue to build their own submarines to a modification of the Soviet "Romeo" class design possibly at a rate of nine a year at Guangzhou (Canton), Jiangnan/Shanghai and Wuchang.

"ROMEO" Class *1979, Chinese Navy*

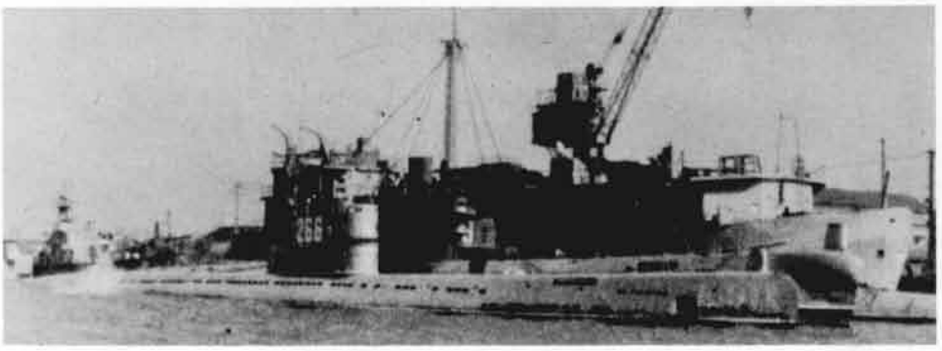
Transfers: Six to North Korea.

21 SOVIET "WHISKEY" CLASS (PATROL TYPE)

119	**127**	**201-8**	**243-4**
120	**129**	**221**	**265-6**
122-3	**131**	**241**	

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 15·1 *(76 × 6·5 × 4·9)*
Guns: 2—25 mm (twin) in some at base of fin
Torpedo tubes: 4—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); (14 torpedoes or 28 mines)
Main machinery: Diesel-electric; 2 shafts;
2 diesels; 4 000 bhp; 2 electric motors; 2 700 bhp
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots (surfaced)
Complement: 54

Equipped with snort. First five boats assembled from Soviet components in Chinese yards between 1956-57—remainder built in China, probably at Jiangnan S.Y. near Shanghai and at Wuchang starting in 1960.



"WHISKEY" Class *1979*

1 Ex-SOVIET "S-1" CLASS (PATROL TYPE)

Displacement, tons: 840 surfaced; 1 050 dived
Torpedo tubes: 6—21 in *(533 mm)*
Main machinery: 4 200 hp diesels; 2 200 hp electric motors

Launched in 1939. Transferred from the USSR in 1955.
One deleted. Last of class, now harbour training boat.

DESTROYERS

8 + 6 "LUDA" CLASS (DDG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
—	105	Lushun-Dalian	—	—	1971
—	106	Lushun-Dalian	—	—	1972
—	107	Lushun-Dalian	—	—	1972
—	108	Lushun-Dalian	—	—	1973
—	131	Lushun-Dalian	—	—	1974
—	132	Lushun-Dalian	—	—	1974
—	161	Lushun-Dalian	—	—	1975
—	162	Lushun-Dalian	—	—	1980

Displacement, tons: 3 250 standard; 3 500 full load
Dimensions, feet (metres): 430 × 45 × 15 *(131 × 13·7 × 4·6)*
Missiles: SSM: SS-N-2 type (two triple launchers)
Guns: 4—130 mm (2 twins) 8—37 mm (twins); 16—25 mm (twins)
A/S weapons: 2—FQF 2500 A/S rocket launchers; 2 DCTs
Main engines: Geared turbines; 60 000 shp; 2 shafts
Speed, knots: 38
Range, miles : 3 200 at 18 knots
Complement: 215

The first Chinese-designed destroyers of such a capability to be built. Of similarity to Soviet "Kotlin" class. The programme was much retarded after 1971 which, possibly coincidentally, marked the death of Lin Biao. In early 1977 building of a new series of this class was put in hand the eighth ship being completed in early 1980. Three more in hand at Guangzhou and three at Luda. Capable of foreign deployment. Three of this class serve in the South Sea Fleet.

Radar: Air search: Cross Slot.
Fire control, guns: Wasp Head, Post Lamp (series one); Sun Visor B, Rice Lamp (series two).
Fire control, missiles: Square Tie.
Navigation: Neptun.

"LUDA" Class — *1980, Australian Department of Defence*

"LUDA" Class — *1980, Australian Department of Defence*

"LUDA" Class — *1980, Australian Department of Defence*

4 "ANSHAN" (Ex-SOVIET "GORDY") CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ANSHAN (ex-*Razyaschy*)	101	Nikolayev-Dalzavod, USSR	1935	1938	1940
ZHANGZHUN (ex-*Reshitelny*)	102	Nikolayev-Dalzavod, USSR	1936	1939	1941
JILIN (ex-*Retivy*)	103	Nikolayev-Komsomolsk, USSR	1936	1940	1941
FUZHUN (ex-*Rezky*)	104	Nikolayev-Komsomolsk, USSR	1935	1939	1941

Displacement, tons: 1 657 standard; 2 040 full load
Dimensions, feet (metres): 370 × 33·5 × 13 *(112·8 × 10·2 × 4)*
Missiles: SSM; SS-N-2 type (two twin launchers) (see note)
Guns: 4—5·1 in *(130 mm)*; 8—37 mm (twins)
A/S weapons: 2 DC racks
Main engines: Tosi geared turbines; 48 000 shp; 2 shafts
Boilers: 3-drum type
Speed, knots: 32
Oil fuel, tons: 540
Range, miles: 2 600 at 19 knots
Complement: 200

Gordy Type 7 of Odero-Terni-Orlando design. Fitted for mine-laying. Two transferred in December 1954 and two in July 1955. Probably reaching the end of their useful lives.

Conversion: All converted between 1971 and 1974. The alterations consist of the replacement of the torpedo tubes by a pair of twin SS-N-2 launchers and the fitting of twin 37 mm mounts in place of the original singles.

Missiles: It is reported that at least one, and possibly all, of the class now mounts six launchers in three triple mounts.

Radar: Air search: Cross Bird.
Fire control: Square Tie.
Navigation: Neptun.
IFF: Ski Pole.

ZHANGZHUN (before conversion) *Hajime Fukaya*

"ANSHAN" Class (after conversion)

FRIGATES

5 "JIANGHU" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
—	511	Shanghai	1974	1975	1976
—	512	Shanghai	1974	1975	1976
—	513	Shanghai	1975	1976	1977
—	514	Shanghai	1976	1977	1978
—	515	Shanghai	1976	1977	1978

Displacement, tons: 1 600 standard; 2 000 full load
Dimensions, feet (metres): 337·8 × 39·4 × 13·1 *(103 × 12 × 4)*
Missiles: SSM; SS-N-2 type (two twin launchers)
Guns: 2—3·9 in *(100 mm)* (singles); 24—37 mm (twins)
A/S weapons: 2—MBU 1200; 2 DCTs; 2 DC racks
Main engines: 2 diesels; 2 shafts; 24 000 shp = 26·5 knots
Range, miles: 4 000 at 15 knots
Complement: 195

Appears to be a modification of "Jiangdong" class with SSM in place of SAM. Fitted with mine racks. Pennant numbers changed in 1979.

Two others reported under construction.

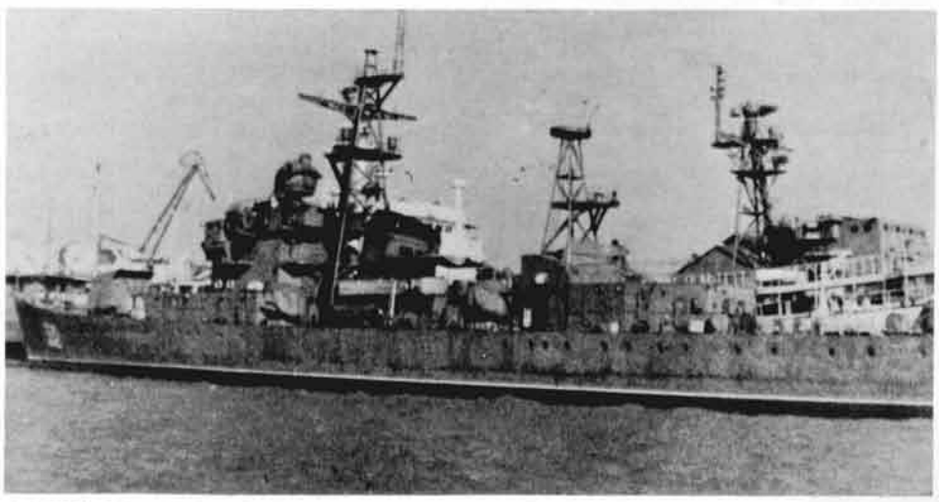
"JIANGHU" Class *9/1980, Lawrence Phillips*

2 + 2(?) "JIANGDONG" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ZHONGDONG	532	Hutong, Shanghai	1971	1973	1977
—	533	Hutong, Shanghai	1972	1974	?

Displacement, tons: 1 600 tons standard; 2 000 full load
Dimensions, feet (metres): 337·8 × 39·4 × 13·1 *(103 × 12 × 4)*
Missiles: SAM; 2 twin launchers
Guns: 2—3·9 in *(100 mm)* (singles); 12—37 mm (twins)
A/S weapons: 2 MBU 1 800; 2 DCTs; 2 DC racks
Main engines: 2 diesels; 2 shafts; 24 000 shp = 26·5 knots
Range, miles: 4 000 at 15 knots
Complement: 190

There have apparently been no further additions to this class. First SAM armed Chinese ships, a missile which apparently caused problems when first introduced and is probably still doing so.
Two may be under construction.



"JIANGDONG" Class (fitting out) *1980*

5 "JIANGNAN" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
—	209	Jiangnan, Shanghai	1965	Jan 1966	1967
—	214	Jiangnan, Shanghai	1965	—	1967
—	231	Jiangnan, Shanghai	1966	—	1968
—	232	Guangzhou	1966	—	1968
—	233	Guangzhou	1967	—	1969

Displacement, tons: 1 350 standard; 1 600 full load
Dimensions, feet (metres): 297·8 × 33 × 12·8 *(90·8 × 10 × 3·9)*
Guns: 3—3·9 in *(100 mm)*/56, 1 fwd, 2 aft;
8—37 mm (twins); 4—12·7 mm (twins)
A/S weapons: 2 MBU 1 800; 4 DCTs; 2 DC racks
Main engines: 4 diesels; 24 000 shp; 2 shafts
Speed, knots: 28
Complement: 175

The Chinese Navy embarked on a new building programme in 1965 of which this class was the first. One of this class was reported as engaged with South Viet-Nam forces in 1974. Similar to Soviet "Riga" class.

Mines: Reported to have a minelaying capability.

Radar: Surface warning: Ball Gun.
Fire control: Wok Won.
Navigation: Neptun.

"JIANGNAN" Class *1973*

4 "CHENGDU" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
GUILIN	504	Guangzhou	1955	1957	1959
GUIYANG	505	Hutong, Shanghai	—	26 Sep 1956	1958
KUNMING	506	Guangzhou	—	1957	1959
CHENGDU	507	Hutong, Shanghai	1955	28 Apr 1956	1958

Displacement, tons: 1 000 standard; 1 320 full load
Dimensions, feet (metres): 300·1 × 33·1 × 10·5
(91·5 × 10·1 × 3·2)
Missiles: SSM; SS-N-2 type (twin launcher)
Guns: 3—3·9 in *(100 mm)* (single); 8—37 mm (twin);
4—14·5 mm MGs (twins)
A/S weapons: 4 DC projectors
Mines: 50 capacity, fitted with rails
Main engines: 2 Geared turbines; 2 shafts; 20 000 shp
Boilers: 2
Speed, knots: 28
Oil fuel, tons: 300
Range, miles: 2 000 at 10 knots
Complement: 175

Assembled from Soviet components.
All had light tripod mast and high superstructure, but later converted with heavier mast and larger bridge. Similar to the Soviet "Riga" class frigates. Two were redesigned with modified superstructure.

Conversion: Two started conversion in 1971 for the replacement of the torpedo tubes by a twin SS-N-2 launcher. All now converted. In 1978-79 additional 37 mm and 14·5 mm guns added.

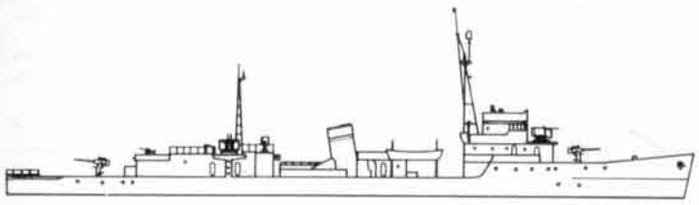
Radar: Surface warning: Slim Net.
Fire control: Sun Visor B for Guns, Square Tie for missiles.
Navigation: Neptun.
IFF: High Pole A.

"CHENGDU" Class (before conversion) *1971*

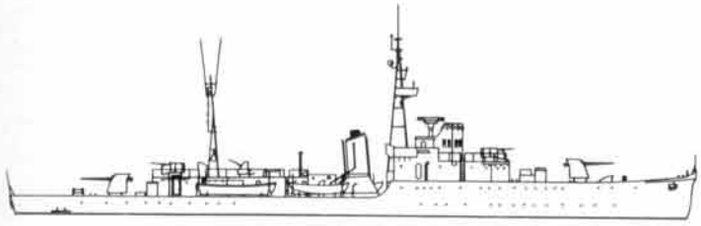
ESCORTS

Note: It is reported that the majority of these escorts are, in fact, not only still in commission but have been refitted and rearmed.

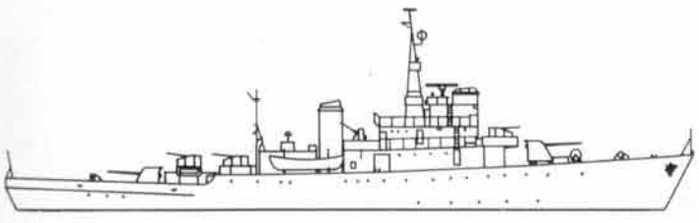
Class	Total	Names	No.	Deployment	Displacement tons, standard	Speed (knots)	Guns	Launched	Range, miles	Complement
Ex-Japanese "Kamishima"	1	— (ex-*Awashima*)	391	N. Sea	766	16·5	2—3 in 6—37 mm	1945	2 400 at 11 knots	130 (est)
Ex-Japanese "Ukuru" (Mod Type B)	1	**HUIAN** (ex-*Shisaka*)	218	E. Sea	940	19·5	3—3·9 in 6—37 mm	1944	5 000 at 16 knots	—
Ex-Japanese "Etorofu" (Mod Type A)	1	**ZHANGBAI** (ex-*Oki*)	230	S. Sea	870	19·5	3—3·9 in 3—37 mm	1942	8 000 at 16 knots	147
Ex-Japanese "Hashidate"	1	**NANZHANG** (ex-*Uji*, ex-*Chang Chi*)	53/224	E. Sea	999	19·5	2—5·1 in 6—37 mm	1940	3 460 at 14 knots	170
Ex-Japanese "Kaikoban" class II (Type D)	5	**WUCHANG** (ex-No 14 (Jap), ex-Chieh 5)	215	E. Sea	740	17·5	2—3 in or 8—37 mm (single) 4/8—25 mm	1944 to 1945	4 500 at 14 knots (turbines)	136
		CHANGSHA (ex-No 118 (Jap), ex-Chieh 12)	216	E. Sea						
		TONGAN (ex-No 192 (Jap))	217	E. Sea						
		ZHIAN (ex-No 194 (Jap), ex-Chieh 6, ex-*Wei Hai*)	219	N. Sea						
		XIAN (ex-No 198 (Jap), ex-Chieh 14)	220	N. Sea						
Ex-British "Castle"	1	**GUANGZHOU** (ex-HMS *Hever Castle*, ex-HMCS *Koppercliff*)	602	—	1 100	16·5	2—3·9 in 10—37 mm	1944	5 400 at 9·5 knots	120
Ex-Australian "Bathurst"	1	**LUOYANG** (ex-HMAS *Bendigo*)	53/220	E. Sea	815	15	2—3·9 in 4—37 mm	1941	4 300 at 10 knots	100
Ex-Nat. Chinese "Ming" (1928)	1	**ZHANGJIANG** (ex-*Hsien Ning*)	53/219	—	420	16	4—37 mm (twin)	1928	—	115



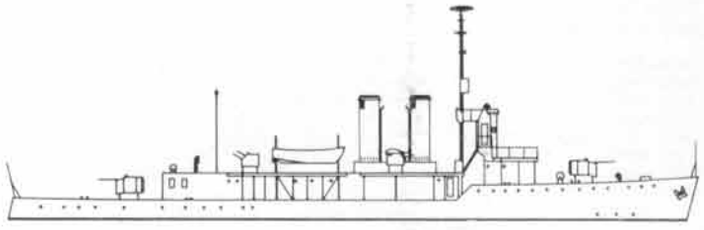
Ex-"KAMISHIMA" Class



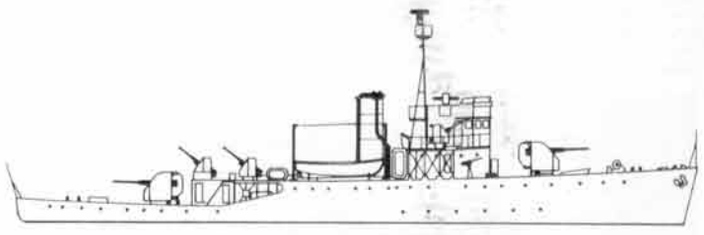
NANZHANG



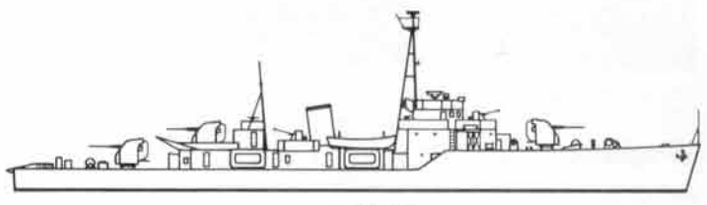
GUANGZHOU



ZHANGJIANG



LUOYANG



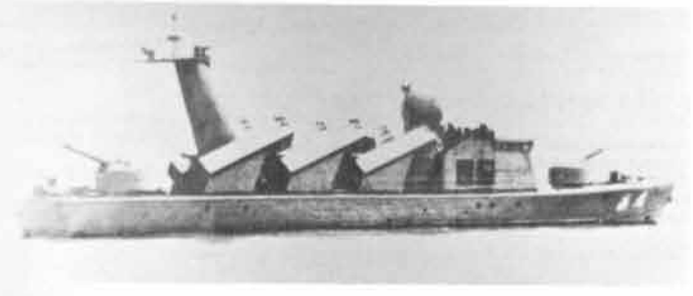
ZHANGBAI

LIGHT FORCES

?2 "HAIDAU" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 300(?)
Dimensions, feet (metres): 155 × 23 × 6·5 *(47 × 7 × 2)*
Missiles: SSM—Six SS-N-2 type (single launchers)
Guns: 4—57 mm (twins)
Main engines: Possibly 1 gas turbine and 2 diesels; 3 shafts = ?35 knots
Complement: Possibly 40

First seen in a film sequence in 1971. Has an air intake some 15 ft high as well as radar, EW and communication aerials. If this is a new design, rather than an experimental class or film prop it is a radical departure and might have top-weight problems. Sometimes listed as "Hai Ying" class.



HAIDAU *1975*

102 SOVIET and CHINESE "OSA" and 1 "HOLA" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)* (see note)
Missiles: SSM—Four SS-N-2 type (single launchers)
Guns: 4—25 mm (2 twin, 1 fwd and 1 aft) (30 mm in first seven)
Main engines: 3 diesels; 12 000 bhp = 36 knots (see note)
Range, miles: 800 at 25 knots
Complement: 30

It was reported in January 1965 that one "Osa" class guided missile patrol boat had joined the Navy from the USSR. Four more were acquired in 1966-67, and two in 1968. A building programme of ten boats a year in China is assumed. The only boat of the "Hola" class, a Chinese variant of the "Osa", has a radome aft, (this may be a prototype for new missile guidance radar), no guns, slightly larger dimensions (137·8 ft *(42 m)* long) and a folding mast.

Pennant numbers: "Osa" class, 3100 series—"Hola", 5100.

Speed: Chinese information credits this class with a speed of 41 knots.

Radar: Square Tie and Drum Tilt in "Osa" class.

"OSA" Class *1979*

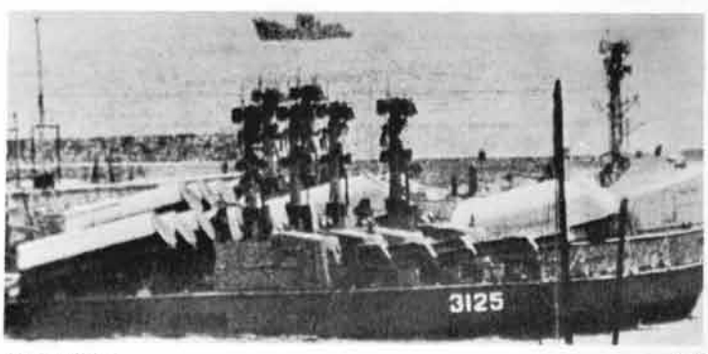
2 SOVIET "KOMAR", 80 CHINESE "HEGU" and 1 "HEMA" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 68 standard; 75 full load
Dimensions, feet (metres): 87·9 × 20·3 × 4·9 *(26·8 × 6·2 × 1·5)*
(26·8 m—"Hegu"; 28·6 m—"Hema")
Missiles: SSM—Two SS-N-2 type (single launchers)
Guns: 2—25 mm (1 twin fwd) (4—25 mm (twins) in "Hema")
Main engines: Diesels; 4 shafts; 4 800 bhp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

One "Komar" class was reported as joining the fleet from the USSR in 1965. Two or three more were delivered in 1967. A building programme of ten a year is assumed of the "Hegu" class a Chinese variant of the "Komar" with a steel hull instead of wooden. The chief external difference is the siting of the launchers clear of the bridge and further inboard, eliminating sponsons and use of pole instead of lattice mast. A hydrofoil variant, the "Hema" class, has a semi-submerged foil forward.

Transfers: Four to Albania, 1976.

Pennant numbers: 3100 Series as "Osa" class.



"HEGU" Class *1979*

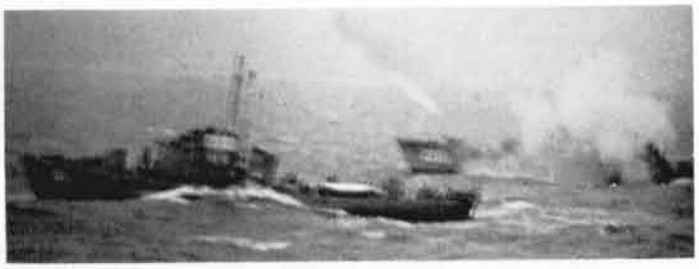
20 "KRONSTADT" CLASS (LARGE PATROL CRAFT)

251-258 (North Sea Fleet); **262-3, 630, 633-5** (East Sea Fleet); **651-6** (South Sea Fleet)

Displacement, tons: 310 standard; 380 full load
Dimensions, feet (metres): 170·9 × 21·5 × 6·9 *(52·1 × 6·5 × 2·1)*
Guns: 1—3·5 in *(85 mm)*; 2—37 mm; 6—14·5 mm (twins)
A/S weapons: 2 rocket launchers; 2 DC racks
Mines: 2 rails for 8-10 mines
Main engines: 3 Diesels; 3 shafts; 3 300 shp = 24 knots
Range, miles: 1 500 at 12 knots
Complement: 40

Six built in 1950-53 were received from USSR in 1956-57. Remainder were built at Shanghai and Guangzhou, with 12 completed in 1956. The last was completed in 1957. A number of these may now be non-operational. North Sea Fleet ships based at Qingdao and Lushun, East Sea Fleet in Chou Shan islands and South Sea Fleet ships at Yulin and Hainan.

Radar: Ball Gun.



"KRONSTADT" Class firing rocket launchers *1972*

24 "HAINAN" CLASS (FAST ATTACK CRAFT—PATROL)

Nos 267—285, 642 +4

Displacement, tons: 360 standard, 400 full load
Dimensions, feet (metres): 197 × 24 × 6·1 *(60 × 7·4 × 2·1)*
Guns: 4—57 mm (twins); 4—25 mm (twins)
A/S weapons: 4—MBU 1 800; 2 DCTs; 2 DC racks
Mines: Rails fitted
Main engines: 4 Diesels; 4 shafts; 8 000 shp
Speed, knots: 30
Range, miles: 1 300 at 15 knots
Complement: 69

A larger Chinese built version of Soviet "SO-1". Low freeboard. The 25 mm guns are abaft the bridge. Programme started 1963-64 and continues—probably four per year in Shanghai.

Radar: Pot Head in most ships, Skin Head in others.
Fire control and navigation sets.

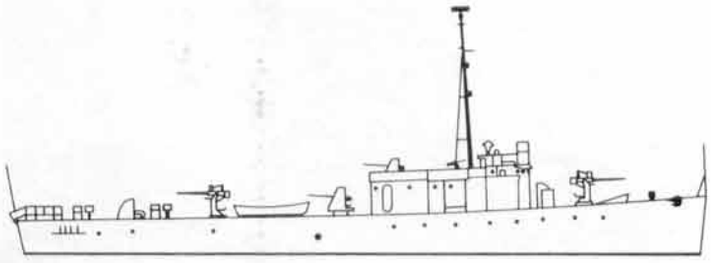
Transfers: Five to North Korea; four to Pakistan.

"HAINAN" Class *1976*

1 Ex-US 173 ft TYPE (LARGE PATROL CRAFT)

Displacement, tons: 280 standard; 450 full load
Dimensions, feet (metres): 173·5 × 23 × 10·8 *(52·9 × 7 × 3·3)*
Guns: 2—3 in *(76 mm)* (single); 3—37 mm (single)
A/S weapons: 2 DC racks; 1 DC rail
Main engines: 2 diesels; 2 880 bhp; 2 shafts = 20 knots
Range, miles: 3 000 at 15 knots
Complement: 70

Transferred 1947. Partially rearmed in 1950s. Used for training in South Sea Fleet.



Ex-US "173 ft" Class

10 "SHANGHAI" CLASS TYPE I (FAST ATTACK CRAFT—GUN)

Displacement, tons: 100 full load
Dimensions, feet (metres): 115 × 18 × 5·5 *(35·1 × 5·5 × 1·7)*
Guns: 2—57 mm (twin fwd); 2—37 mm (twin aft)
Torpedo tubes: Twin 18 in (originally in some—now removed)
A/S armament: 8 DCs
Mines: Minerails can be fitted for 10 mines
Main engines: 4 diesels; 4 800 bhp = 28 knots
Complement: 25

The prototype of these boats appeared in 1959. Main difference from successors is lack of midships guns.

Radar: Skin Head.

Sonar: Hull-mounted.

Transfers: 15 to North Korea.

295 "SHANGHAI" CLASS TYPE II, III, IV and V (FAST ATTACK CRAFT—GUN)

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin); 4—25 mm (twin) (Type II);
2—57 mm (twin); 1—25 mm (Types III and IV)
Note: In some boats a twin 75 mm recoilless rifle is mounted forward
A/S weapons: 8 DCs
Mines: Minerails can be fitted for 10 mines
Main engines: 4 diesels; 4 800 bhp = 30 knots
Complement: 25

Construction began in 1961 and continues at Shanghai and other yards at rate of about ten a year. Numbers markedly reduced due to deletions and transfers.

Appearance: The three versions vary slightly in the outline of their bridges.

Pennant numbers: 1300 and 4300 series.

Radar: Skin Head.

Sonar: It is reported that a hull-mounted set is fitted with VDS in some.

Transfers: Six to Albania, two to Cameroon in 1976, three to Congo, six to Guinea, twelve to Pakistan, five to Sri Lanka in 1972, three to Sierra Leone in 1973, seven to Tanzania in 1970-71, eight to North Viet-Nam in May 1966 plus Romanian craft of indigenous construction.

"SHANGHAI II" Class *1970*

3 "HAIKOU" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 160 standard; 175 full load (est)
Dimensions, feet (metres): 150 × 21 × 7 (est) *(45·7 × 6·4 × 2·1)*
Guns: 4—37 mm (twins); 4—25 mm (twin, vertical)
Main engines: 4 diesels = 30 knots (?)
Range, miles: 850 at 20 knots (est)

Believed built in 1960s on enlarged "Shanghai" hull.

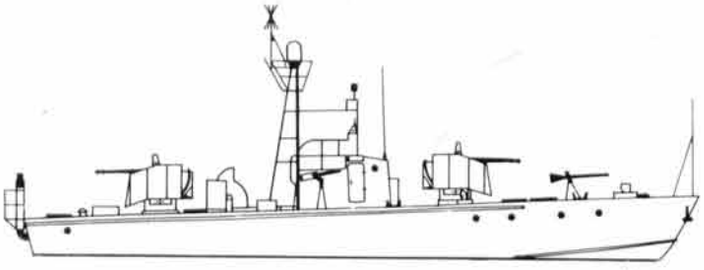
66 "SHANTOU" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 80 full load
Dimensions, feet (metres): 83·5 × 19 × 6·5 *(25·5 × 5·8 × 2)*
Guns: 4—37 mm, (twins); 2—12·7 mm (some boats mount a twin 75 mm recoilless rifle fwd)
A/S weapons: 8 DCs
Main engines: 4 diesels; 3 000 hp = 28 knots
Range, miles: 500 at 28 knots; 750 at 15 knots
Complement: 17

From 1958 constructed at Luda, Guangzhou and Shanghai. A steel-hulled version of Soviet "P 6". Now obsolescent and being deleted. Previously "Swatow" class.

Deployment: 28 in East Sea Fleet, 20 in South Sea Fleet, 18 in North Sea Fleet.

Transfers: Eight to North Korea, 14 to North Viet-Nam.



"SHANTOU" Class

120 "HUCHUAN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 39 full load
Dimensions, feet (metres): 71·5 × 16·6 oa × 3·3 (hullborne) *(21·8 × 5 × 1)*
Guns: 4—14·5 mm (twin)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3 M50 12-cyl diesels; 2 shafts; 3 600 hp = 50+ knots in calm conditions
Range, miles: 500 cruising

Hydrofoils designed and built by China, in the Hutong yard, Shanghai. Construction started in 1956. At least 25 hydrofoils were reported to be in the South China Fleet in 1968. Of all-metal construction with a bridge well forward and a low super-structure extending aft. Forward pair of foils can apparently be withdrawn into recesses in the hull. A continuing programme at possibly ten per year. Previously "Hu Chwan" class.

Appearance: There are two variants. One has a twin mounting amidships and one aft with the front of the bridge well forward of the lips of the tubes. The other has the front of the bridge in line with the lips of the tubes and the first mounting on the fo'c'sle.

Pennant numbers: Appear to be in 200 series.

Radar: Skin Head.

Transfers: 32 to Albania, four to Pakistan, four to Tanzania plus Romanian craft of indigenous construction plus three from China.

"HUCHUAN" Class *1978*

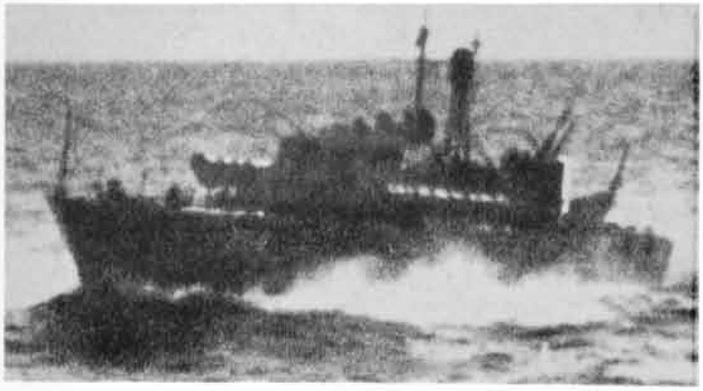
70 "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (twins)
Torpedo tubes: 2—21 in *(533 mm)* (or mines or 12 DCs)
Main engines: 4 M50 diesels; 4 800 bhp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

This class has wooden hulls. Some were constructed in Chinese yards largely at Shanghai. Most built prior to 1966.

Radar: Skin Head plus navigation and fire control sets.

Transfers: Six to North Viet-Nam in 1967.



"P 6" Class *J. Meister*

65 "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·5 mm
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 400 bhp; 2 shafts = 50 knots
Range, miles: 400 at 13 knots
Complement: 12

This class has aluminium hulls. Numbers decreasing. Approximately 50 in reserve.

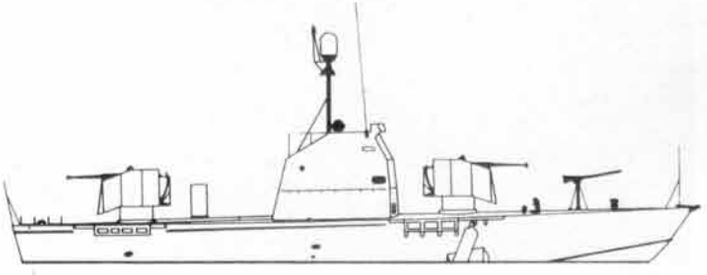
Transfers: Six to Albania.

"P 4" Class *J. Meister*

2 "SHANDONG" CLASS (FAST ATTACK HYDROFOIL—GUN)

Displacement, tons: 80
Dimensions, feet (metres): 83·5 × 19 × 6·5 *(25·5 × 5·8 × 2)*
Guns: 4—37 mm (twins); 1 recoilless rifle
Main engines: 2 diesels; 3 800 hp = 40 knots

An unsuccessful hydrofoil variant of the "Shantou" class.



"SHANDONG" Class

47 "HUANGPU" CLASS (RIVER PATROL CRAFT)

Displacement, tons: 42 standard; 50 full load
Dimensions, feet (metres): 88·6 × 13 × 5 *(27 × 4 × 1·5)*
Guns: 4—25 mm (twins) (rearmed)
Main engines: 2 diesels; 1 000 hp = 14 knots
Range, miles: 400 at 9 knots
Complement: 25

Built in Guangzhou and Shanghai 1950-55 probably for riverine duties. Underpowered with low freeboard. Previously "Whampoa" class.

Deployment: 29 in East Sea Fleet, ten in North Sea Fleet and eight in South Sea Fleet.

"HUANGPU" Class *1975*

40 "YULIN" CLASS (RIVER PATROL CRAFT)

Displacement, tons: 10
Dimensions, feet (metres): 40 × 9·5 × 3·5 *(12·2 × 2·9 × 1·1)*
Guns: 2—14·5 mm (twin); 2—12·7 mm
Main engine: 1 diesel; 300 bhp; 1 shaft = 20-24 knots
Complement: 10

Built in Shanghai 1964-68.

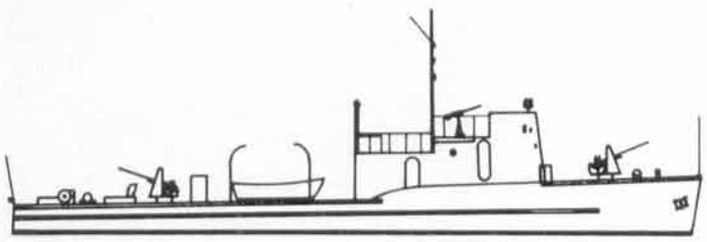
Transfers: Four to Congo (1966), three to Kampuchea, four to Tanzania.

"YULIN" Class *1975*

30 "FUJIAN" CLASS (RIVER PATROL CRAFT)

Length, feet (metres): 65 *(20)* approximately
Guns: 2—12·7 mm (single); 1 MG

Operate primarily on rivers in East Sea Fleet area.



"FUJIAN" Class

"YINGKOU" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 30 (est)
Dimensions, feet (metres): 70 × 12 × 3 *(21·3 × 3·7 × 0·9)*
Guns: 2—12·7 mm (single)
Main engine: 1 diesel; 300 bhp; 1 shaft = 16 knots

Built in early 1960s.

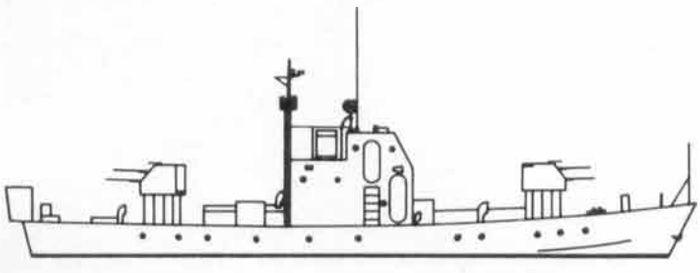
"YINGKOU" Class *1978, Ziro Kimata*

4 "TAISHAN" CLASS (COASTAL PATROL CRAFT)

3 "BEIHAI" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 50 approx
Length, feet (metres): 90 *(27·5)* approx
Guns: 4—25 mm (twin)

Originally a class of about 50 built in early 1950s. Soon to be deleted.



"BEIHAI" Class

MINE WARFARE FORCES

Notes: (a) One ship of "Wusong" class (MSC) built in 1970-72. Apparently unsuccessful. Reported transferred to North Viet-Nam 1974.
(b) There are also some 60 auxiliary minesweepers of various types including trawlers.
(c) 20 MSC of "Fushun" class also reported. Details unknown.

23 SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

341-2, 364-6, 375-380, 386-9, 396-9, 801-3, 807

Displacement, tons: 500 standard; 600 full load
Dimensions, feet (metres): 196·8 × 27·6 × 6·9 *(60 × 8·4 × 2·1)*
Guns: 2—37 mm (twin); 2—25 mm (twin); 4—14·5 mm (twins—in most ships)
A/S weapons: 2 DCTs
Mines: Can carry 20
Main engines: 2 diesels; 2 shafts; 2 200 bhp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 77

Four were acquired from USSR in 1954-55, one being returned 1960; 26 more were built in Chinese shipyards, the first two in 1956. The construction of "T 43" class fleet minesweepers was stopped at Wuzhang, but continued at Guangzhou. Last pair built in 1966. Three (Soviet ships) converted for surveying, three transferred as civilian research ships.
Most of the Chinese variant are of the 60 m "Long hull" design.

Deployment: Seven in North Sea Fleet (364-6, 801-3, 807), eight in East Sea Fleet (341-2, 375-80) and eight in South Sea Fleet (386-9, 396-9).

Radar: Ball Gun and navigation set.

AMPHIBIOUS WARFARE FORCES

14 Ex-US "1-511" CLASS (LST)

341-3, 351, 355, 901-3, 921-6

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 4·3)*
Guns: 2/3—76·2 mm; 6/8—40 mm
Mines: All capable of minelaying
Main engines: 2 diesels; 2 shafts; 1 700 bhp = 11 knots
Troops: 165

Two transferred to North Viet-Nam as tankers. Some other ex-US LSTs are in the merchant service. Some armed with rocket launchers.

Deployment: Six in North Sea Fleet (341-3, 901-3) at Luda, six (921-6) in East Sea Fleet at Shanghai and two (351, 355) in South Sea Fleet at Guangzhou.

1 "YUKAN" CLASS (LST)

927

Reported as a new construction programme with first completed in 1980.

14 Ex-US LSM TYPE

352-4, 393-6, 511, 931-6

Displacement, tons: 743 beaching; 1 095 full load
Dimensions, feet (metres): 203·5 × 34·2 × 8·3 *(62·1 × 10·4 × 2·5)*
Guns: 4—37 mm (twins)
Main engines: 2 diesels; 2 shafts; 3 600 hp = 13 knots
Range, miles: 2 500 at 12 knots

Built in USA in 1944-45. Some were converted for minelaying and as support ships. Armament varies. Up to ten of these may be transferred temporarily to commercial operations.

Deployment: Three in North Sea Fleet (394-6), seven in East Sea Fleet (511, 931-6) and four in South Sea Fleet (352-4,393).

6 Ex-US LSIL TYPE (also see Supply and Support Ships)

231, 232, 371-4

Displacement, tons: 230 light; 387 full load
Dimensions, feet (metres): 157 × 23 × 6 *(47·9 × 7 × 1·8)*
Guns: 4—20 or 25 mm
Main engines: 2 diesels; 2 shafts; 1 320 bhp = 14 knots

Built in USA in 1943-45. Reported to be fitted with rocket launchers. Some are fitted as minesweepers. Armament varies.

Deployment: Four in East Sea Fleet (Shanghai) (371-4) and two in South Sea Fleet (Zhanjiang) (231-2).

1 "YULING" CLASS (LSM)

335

164 ft *(50 m)*—580 ton LSM built in China in 1971. Stationed at Qingdao.

1 "YUDAO" CLASS (LSM)

An experimental twin-funnelled ship possibly built in late 1960s.

19 Ex-US or BRITISH LCU (ex-LCT) TYPE

Former Tank Landing Craft later reclassified as Utility Landing Craft. There are reported to be eleven utility landing craft comprising two of the ex-British LCT (3) class and eight of the ex-US LCT (5) and LCT (6) class. Used for logistic support and carry auxiliary pennants.

300 "YUNNAN" CLASS (LCU)

Displacement, tons: 300
Length, feet (metres): 95·1 *(29)*

Built in China 1968-72. Pennant numbers in 3000 series (3313, 3321, 3344 seen).

"YUNNAN" Class

About 150 Ex-BRITISH/US LCMs

SUBMARINE SUPPORT SHIPS

2 "DAJIANG" CLASS

Submarine rescue ships of about 370 ft and 5 000 tons with a helicopter deck and hangar for two aircraft.

"DAJIANG" Class *1980, RNZAF*

2 "TUZHONG" CLASS

T 710 **T 830**

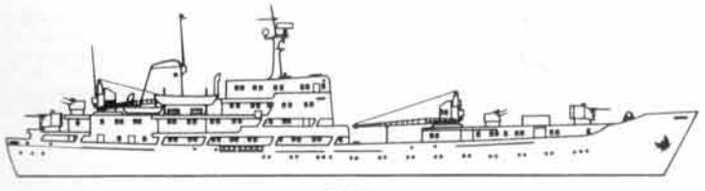
Submarine rescue ships of about 250 ft and 2 300 tons.

"TUZHONG" Class *1980, RNZAF*

DAZHI

Displacement, tons: 6 000
Dimensions, feet (metres): 350 × 50 × 20 *(106·7 × 15·3 × 6·1)*
Guns: 4—37 mm (twins); 4—25 mm (twins)

Reported in 1973.



DAZHI

SUPPORT SHIPS

1 "YEN KA" CLASS

Built in China in 1969. Light forces support ship. Serves in North Sea Fleet.

1 "YEN PAI" CLASS

Built in Shanghai 1971-72.

2 Ex-US LSILs

Details in Amphibious Warfare Section. Light forces support ships in North Sea Fleet.

SALVAGE SHIPS

3 "YEN TING" CLASS

Built, probably in Shanghai in 1972-74.

REPAIR SHIPS

DAGUSHAN (ex-*Xingan*, ex-USS *Achilles*, ARL 41, ex-*LST 455*)

Displacement, tons: 1 625 light; 4 325 full load
Dimensions, feet (metres): 328 × 50 × 11 *(100 × 15·2 × 3·4)*
Guns: 12—37 mm (twins)
Main engines: Diesel-electric; 2 shafts; 1 700 bhp = 12 knots

Launched on 17 October 1942. Originally of US "Achelous" class. Burned and grounded in 1949, salvaged and refitted.
Reportedly operates from Shanghai.

1 "GALATI" CLASS

Converted AK. With South Sea Fleet.

RESEARCH AND SURVEY SHIPS

2 SPACE EVENT SHIPS

YUAN WANG 1 and **2**

Of about 650 ft and 10-15 000 tons. Probably commissioned in 1979. Have helicopter platform but no hangar.

"YUAN WANG" Class *1980, RNZAF*

2 SURVEY SHIPS

Displacement, tons: 1 500
Dimensions, feet (metres): 259·3 × ? × 15 *(79·1 × ? × 4·6)*
Main engines: 2 diesels; 2 shafts; 4 200 hp = 17 knots

Ordered from Mitsui, Tamano in January 1978.

1 "SHIJIAN" CLASS (AGOR)

SHIJIAN

Displacement, tons: 3 750
Dimensions, feet (metres): 311·6 × 46 × 16·4 *(95 × 14 × 5)*
Guns: 8—14·5 mm (twins)
Main engines: Diesels; 2 shafts
Range, miles: 8 000
Complement: 125 approx

Completed August 1968.

Radar: Decca 707.

SHIJIAN *1980, USN*

XIANGYANG HONG 4

Research ship of unmistakeable profile.

XIANGYANG HONG 4 *1980, USN*

XIANGYANG HONG 5

Displacement, tons: 14 000
Dimensions, feet (metres): 500 × 64 × 28·9 *(152·5 × 19·5 × 8·8)*
Main engines: 2 diesels; 7 250 shp = 16 knots
Range, miles: 12-15 000

Built as Polish B41 Type *(Francesco Nullo)* in 1967. Purchased by China and rebuilt 1970-72 in Guangzhou. Stationed at Guangzhou. Possibly civilian manned. Acts as environmental research ship. Four sister ships in Chinese mercantile fleet. Operated by Academy of Science. Recently the goal post with a parabolic aerial has been removed from its position aft.

XIANGYANG HONG 5 *1980, RNZAF*

XIANGYANG HONG 9 and **10**

Xiangyang Hong 10 of 10 000 tons with helicopter deck, built about 1974. Operate in conjunction with the Academy of Science.

XIANGYANG HONG 9 *1980, RNZAF*

XIANGYANG HONG 10 *1980, USN*

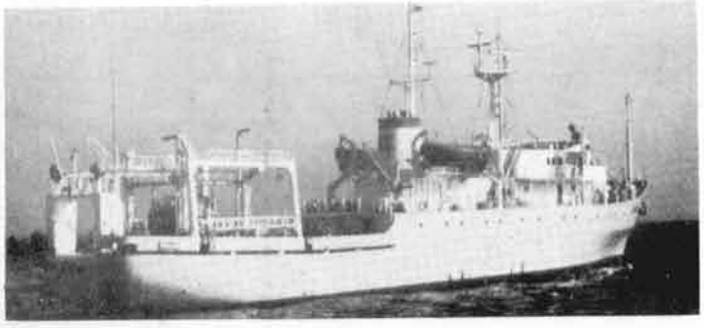
1 + 2 GEOPHYSICAL RESEARCH SHIPS

NAN HAI 502 **BIN HAI** 511 — 512

Measurement, tons: 942·5 gross; 697 deadweight
Dimensions, feet (metres): 215·5 × 36·9 × 13·5 *(65·7 × 11·2 × 4·1)*
Main engines: 2 Yanmar CG-ST diesels; 2 000 hp; 1 screw (cp propeller) = 15 knots
Complement: 50 (31 + 19 scientists)

Built (502) by Mitsubishi Heavy Industries with two more on order. Designed for bathymetric and seismic research using satellite and terrestrial fixing.

Radar: Two navigation sets.



NAN HAI *1980, Mitsubishi*

2 "HAICE" CLASS (AGS)

HAI SHENG 701 — 702

Displacement, tons: 400 standard
Dimensions, feet (metres): 125 × 25 × 11 (est) *(38 × 7·6 × 3·4)*
Guns: 4—25 mm (vertical twins)
Main engine: 1 diesel; 4 600 bhp = 12 knots (est)

Possibly built in 1960s. Certainly operational in 1971 off Paracel Islands.

1 "YENLUN" CLASS (AGOR)

YENLUN

Completed in 1965, possibly at Shanghai. Similar to Soviet 3 000-ton "Zubov" class.

1 Ex-JAPANESE "KAIKOBAN II" CLASS (AGS)

Displacement, tons: 740
Dimensions, feet (metres): 228 × 28·5 × 11·8 *(69·5 × 8·7 × 3·6)*
Main engines: Geared turbine; 1 shaft; 2 500 shp = 17·5 knots
Complement: 160(?)

Believed built in 1945. Of the thirteen ships of the "Kaikoban" classes surrendered by the Japanese in 1945, seven are listed under "Escorts". Five presumed scrapped.

3 "SHU GUANG" CLASS (ex-T-43) (AGOR)

SHU GUANG 1, 2 and 3 Nos 377, 386, 396

For details see under Mine Warfare Forces. Converted from Minesweepers in late 1960s. All painted white. Originally of Soviet construction of 58 m length.

SHU GUANG 3 *1980*

2-3 "YENLAI" CLASS (AGS)

— 629 — 512 —

Displacement, tons: 1 100
Dimensions, feet (metres): 229·6 × 32·1 × 9·7 *(70 × 9·8 × 3)*
Guns: 4—37 mm (twins)
Main engine: Probably diesel; 1 shaft = 16 knots
Range, miles: 2 000 approx
Complement: 100

Probably built in Shanghai in early 1970s. Prominent square bridge and funnel amidships.

1 "GANZHU" CLASS (AGS)

K 420

Displacement, tons: 1 000
Dimensions, feet (metres): 213·2 × 29·5 × 9·7 *(65 × 9 × 3)*
Guns: 4—37 mm (twins); 4—25 mm (twins)
Main engines: Diesel; approx 5 000 shp = 20 knots
Complement: 125 (est)

Built in Guangzhou 1971-73. Frigate-type bridge. Prominent raked funnel. Worked in Hong Kong area 1975.

1 Ex-BRITISH "FLOWER" CLASS (AGS)

KAIFENG (ex-*Clover*)

Displacement, tons: 1 160
Main engines: Steam reciprocating, 2 750 ihp

Built by Fleming and Ferguson in 1941. Sold commercially and acquired by China. Served as escort and reported as disarmed for survey duties in 1974-75.

1 Ex-US LSIL

See Amphibious Warfare section for details. Converted in late 1960s to monitor acoustic signatures of surface ships and submarines.

1 COASTAL SURVEY CRAFT

Ex-ZHONGNING (ex-Japanese *Takebu Maru*)

Displacement, tons: 200 standard
Dimensions, feet (metres): 115 × 16 × 6 *(35 × 4·9 × 1·8)*
Speed, knots: 10

Former Japanese. Employed for hydrographic and general purpose duties.

1 COASTAL SURVEY CRAFT

Ex-FUDING

Displacement, tons: 160 standard
Dimensions, feet (metres): 90 × 20 × 8 *(27 × 6·1 × 2·4)*
Speed, knots: 11

COMMAND SHIP

1 "YEN KENG" CLASS

Built in Shanghai 1968-70. May be a Light Forces command ship in Shanghai area.

BOOM DEFENCE VESSELS

Note: Probably now used as service vessels.

1 Ex-BRITISH "BAR" CLASS

— (Ex-Japanese No 101, ex-HMS *Barlight*)

Displacement, tons: 750 standard; 1 000 full load
Dimensions, feet (metres): 173·8 × 32·2 × 9·5 *(53 × 9·8 × 2·9)*
Guns: 1—3 in; 6 MGs
Main engines: Triple expansion; 850 ihp = 11·75 knots
Boilers: 2 single-ended

Built by Lobnitz & Co Ltd, Renfrew. Launched on 10 September 1938. Captured by Japanese in 1941. Acquired by China in 1945. At Shanghai.

5 Ex-US "TREE" CLASS

Displacement, tons: 560 standard; 805 full load
Dimensions, feet (metres): 163 × 30·5 × 11·8 *(49·7 × 9·3 × 3·6)*
Gun: 1—3 in
Main engines: Diesel-electric; 800 bhp = 13 knots

One at Shanghai.

SUPPLY SHIPS

In addition to the following there may be another 12 coastal merchant ships operating under naval control.

2 "GALATI" CLASS (AK)

HAIYUN 318 **HAIJIU** 600

Displacement, tons: 5 300
Dimensions, feet (metres): 328 × 47·9 × 21·6 *(100 × 14 × 6·6)*
Main engine: Diesel; 1 shaft = 12·5 knots
Oil fuel: 250 tons
Range, miles: 4—5 000
Complement: 50

Built at Santieral Shipyard, Calati, Romania in 1960s. Nine ships purchased of which these two were converted to AKs in early 1970s. Cargo capacity of approximately 3 750 tons with ten crane/booms for handling. Both reported operating in South Sea Fleet.

1 "ZHANDOU" CLASS (AK)

Displacement, tons: 4 500
Dimensions, feet (metres): 311·6 × 41 × 18 *(95 × 12·5 × 5·5)*
Main engine: 1 diesel; 1 shaft = 12·5 knots approx
Range, miles: 3—4 000
Complement: 50 approx

A class of 15-20 merchant ships was built in Shanghai 1959-65 of which one or maybe more transferred to the navy. Have prominent bridge and funnel aft.

1 "ANDONG" CLASS (AF)

Chinese built.

2 or 3 "DANLIN" CLASS (AK)

Displacement, tons: 1 500

Built in China in late 1960s. May have a refrigerated stores capability.

3 Ex-US ARMY FS 330 TYPE

Ex-US Army FS 146 (ex-*Clover*)
Ex-US Army FS 155 (ex-*Violet*) +1

Displacement, tons: 811 full load
Dimensions, feet (metres): 180 × 32 × 10 *(54·9 × 9·8 × 3)*
Main engines: General Motors diesels; 1 000 bhp = 12 knots

Built in USA in 1944-45. Two are reported to be employed as support ships for fast attack craft. With South Sea Fleet.

2 Ex-US LSILs

At Shanghai supporting island garrisons. (See Amphibious section for details.)

3—4 "LEIZHOU" CLASS (WTL)

Details under same class in Tankers section.

9 "FUZHOU" CLASS (WTL)

FUZHOU +8

Large water carriers of 1 100 tons. Details under same class in Tankers section. Four in North Sea Fleet, three in East Sea Fleet, two in South Sea Fleet.

FLEET REPLENISHMENT SHIP

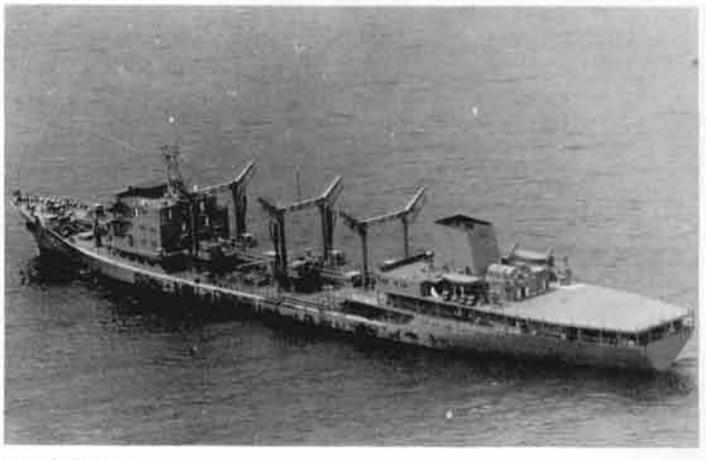
1 "BINHAI" CLASS

New construction of a type hitherto unknown in the Chinese navy.

TANKERS

2 "FUQING" CLASS

Of about 525 ft and 20 000+ tons. First operational in late 1979. Built at Shanghai. This is the first class of ships built for underway replenishment in the Chinese navy.



"FUQING" Class

1 Ex-JAPANESE "TM" CLASS (AO)

HAIYU 401

Displacement, tons: 4 500
Dimensions, feet (metres): 308·3 × 44·3 × 19 *(94 × 13·5 × 5·8)*
Main engines: Turbo-electric; 1 shaft = 11 knots
Fuel: 250 tons
Range, miles: 3 750 at 7·5 knots
Complement: 35 (est)

Cargo capacity 3 750 tons FFO. Bridge and funnel aft. An emergency Japanese class handed to the USSR in 1945 and to China in Shanghai 1945. Modernisation in 1960s changed appearance somewhat.

14 "FUZHOU" CLASS

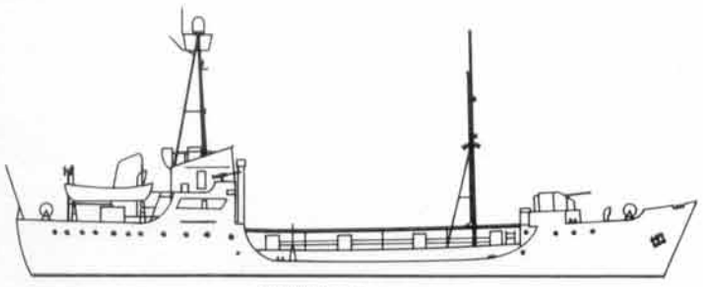
Displacement, tons: 1 100
Dimensions, feet (metres): 164 × 29·5 × 11·5 *(50 × 9 × 3·5)*
Main engine: 1 diesel; 1 shaft = 12 knots
Range, miles: 1 500
Complement: 30-35

Reported as built in Shanghai 1964-70. Some may carry twin 25 mm or 37 mm mounts. Cargo capacity 650-700 tons. Prominent bridge and funnel aft.

5 "LEIZHOU" CLASS (AOTL)

Displacement, tons: 900
Dimensions, feet (metres): 157·4 × 28·9 × 9·7 *(48 × 8·8 × 3)*
Guns: 2—37 mm (twin)
Main engine: Diesel; 1 shaft = 10-12 knots
Range, miles: 1 200
Complement: 25-30

Built in late 1960s probably at Qingdao or Wutong.



"LEIZHOU" Class

2 Ex-US "MATTAWEE" CLASS (AOG)

Originally petrol tankers. Both at Shanghai.

ICEBREAKERS

2 "HAIBING" CLASS

101 **102**

Displacement, tons: 3 000
Dimensions, feet (metres): 275 × 50 × 16 *(83·8 × 15·3 × 4·9)*
Guns: 8—37 mm (twins)
Main engine: 3 000 hp; 1 shaft = 15 knots

Built in 1969-73 at Shanghai. Employed as icebreaking tugs in Bo Hai Gulf for port clearance.

SERVICE CRAFT

There are also reported to be 125 armed motor junks, 100 armed motor launches and 150 service craft and miscellaneous boats.

TUGS

16 "GROMOVOY" CLASS (ARS)

Chinese built, nine in North Sea Fleet and seven in East Sea Fleet.

3 "DING HAI" CLASS (ARS)

4 "YAN DENG" CLASS (ARS)

1 Ex-SOVIET "ROSLAVL" CLASS (ARS)
3 CHINESE "ROSLAVL" CLASS (ARS)

Displacement, tons: 670 full load
Dimensions, feet (metres): 145 × 31 × 11·4 *(44·2 × 9·5 × 3·5)*
Main engine: Diesel; 1 shaft; 1 500 shp = 12 knots
Fuel: 100 tons
Range, miles: 6 000 at 11 knots
Complement: 28

First ship transferred by the USSR late 1950s. Remainder built in China in mid-1960s.

2 Ex-US 149 ft ATA

2 Ex-US 143 ft ATA

5 Ex-US ARMY 75 ft YTL

3 FT-14 CLASS (ARS)

MARITIME MILITIA

In the early 1950s certain ships of the deep-sea and coastal fishing fleets were formed into the Maritime Militia. These ships, under the control of the local branch of the party, carry members of the Young Communist League and, when required, act in support or as cover for naval forces. Their normal task is reconnaissance and surveillance but, on occasions, they have been armed with machine guns (eg. Paracel Islands, 1974). (For further details see "Guide to Far Eastern Navies" ed. Blechman and Berman, USNI 1978.)

Auxiliary Trawler of Maritime Militia *2/1978, G. Vitali*

COLOMBIA

Ministerial

Minister of National Defence:
General Abraham Varon Valencia

Headquarters' Appointments

Fleet Commander:
Admiral Jaime Barrera Larrarte
Chief of Naval Operations:
Vice-Admiral Alfonso Diaz Osorio
Chief of Naval Staff:
Rear-Admiral Héctor Calderón Salazar

Diplomatic Representatives

Naval Attaché in London:
Lieut-Commander E. Cajiao
Naval Attaché in Washington:
Captain Rafael Grau Arano

Personnel

(a) 1981: 700 officers and 6 500 men and 1 500 marines
(b) 2 years' national service

Bases

Cartagena. Main naval base (floating dock, 1 slipway) synchro-lift, schools.
Buenaventura. Small Pacific base.

Maritime Air Force

The Colombian Air Force with 50 helicopters and a number of attack/reconnaissance aircraft provides any support required by the navy.

Naval Infantry

Corpo de Infanteria de Marina is one battalion based at Cartagena, Buenaventura and Barranquilla.

Prefix to Ships' Names

ARC (Armada Republica de Colombia)

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Patrol Submarines	2 + 2 (70 tons)	—
Destroyers	3	—
Frigates	1	(4)
Patrol Ships	3	—
Coastal Patrol Craft	10	—
Coast Guard Craft	9	—
Gunboats	4	—
Survey Vessels	3	—
Tanker	1	—
Transports	4	—
Training Ship	1	—
Tugs	12	—
Floating Docks	3	(2)
Floating Workshop	1	—
Repair Craft	1	—

Cuerpo del Guardacosta

AN numbered Patrol Craft belong to this force which carries out certain Coast Guard duties and also operates some aircraft. Established under present title in 1979.

Mercantile Marine

Lloyd's Register of Shipping:
69 vessels of 283 457 tons gross

DELETIONS

Note: The transfers of USS *Duval County* and USS *Midas* were cancelled in 1979.

Destroyer

1977 *Caldas* ("Allen M. Sumner" class)

Frigates

1977 *Almirante Tono* (ex-US APD type)
1980 *Cordoba* (ex-US "Crosley" class) sold for scrap

Light Forces

1974 *Gen. Rafael Reyes, Alberto Restrepo, Independiente, Palace, Tormentosa, Triunfante, Valerosa, Voladora*

Survey Ship

1974 *Bocas de Ceniza*

Transports

1974 *Bell Salter, Rafael Martinez*

Tankers

1974 *Covenas, Mamonal, Sancho Jimeno*

Tugs

1975 *Bahia Honda* (grounded 13 Feb and scrapped)
1977 *Abadia Mendez*

SUBMARINES

2 TYPE 209 PATROL SUBMARINES

Name	*No.*	*Builders*	*Commissioned*
PIJAO	SS 28	Howaldtswerke, Kiel	17 Apr 1975
TAYRONA	SS 29	Howaldtswerke, Kiel	18 July 1975

Displacement, tons: 1 180 surfaced; 1 285 dived
Dimensions, feet (metres): 183·4 × 20·5 × 17·9 *(55·9 × 6·3 × 5·4)*
Torpedo tubes: 8—21 in bow with reloads
Main machinery: Diesel-electric; 4 MTU diesel-generators; 1 shaft; 5 000 hp
Speed, knots: 22 dived

Ordered in 1971.

PIJAO *1975, Dhr. J. van der Woude*

2 TYPE SX-506 SUBMARINES

Name	*No.*	*Builders*	*Commissioned*
INTREPIDO	SS 20	Cosmos Livorno	1972
INDOMABLE	SS 21	Cosmos Livorno	1972

Displacement, tons: 58 surfaced; 70 dived
Dimensions, feet (metres): 75·4 × 6·6 × 13·2 *(23 × 2 × 4)*
Main machinery: Diesel-electric; 300 bhp
Speed, knots: 8 surfaced; 6 dived; 7 snorting
Range, miles: 1 200 at 7 knots
Complement: 5

Delivered in sections for assembly in Cartagena. Can carry eight attack swimmers with 2 tons of explosives, as well as two swimmer-delivery-vehicles (SDVs). Diving depth 330 ft *(100 m)*.

DESTROYERS

2 "MODIFIED HALLAND" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
VEINTE DE JULIO	D 05	Kockums Mek Verkstads A/B, Malmo	Oct 1955	26 June 1956	15 June 1958
SIETE DE AGOSTO	D 06	Götaverken, Gothenburg	Nov 1955	19 June 1956	31 Oct 1958

Displacement, tons: 2 650 standard; 3 300 full load
Dimensions, feet (metres): 397·2 × 40·7 × 15·4 *(121·1 × 12·4 × 4·7)*
Guns: 6—4·7 in *(120 mm)* (3 twin turrets); 4—40 mm (single)
Torpedo tubes: 4—21 in *(533 mm)*
A/S weapons: 1 Bofors 375 mm A/S rocket launcher
Main engines: De Laval double reduction geared turbines; 2 shafts; 55 000 shp
Boilers: 2 Penhöet-Motala-Verkstad; 568 psi; 840°F
Speed, knots: 25 (16 economical); 32 *(Siete de Agosto)*
Oil fuel, tons: 524
Range, miles: 445 at full power
Complement: 248 (21 officers, 227 men)

Ordered in 1954. The hull and machinery are similar to the Swedish class but they have different armament (six 4·7-in instead of four, no 57 mm guns, four 40 mm guns instead of six, and four torpedo tubes instead of eight) and different accommodation arrangements. They have an anti-submarine rocket projector, more radar and communication equipment, and air-conditioned living spaces, having been designed for the tropics.

Engineering: Although the designed speed of D 05 was 35 knots, it is officially stated that the maximum sustained speed does not exceed 25 knots.

Radar: Search: HSA LW-03/SGR 114.
Tactical: HSA DA-02/SGR 105.
Fire control: I band, probably HSA M20 series (six sets).

Refit: *Siete de Agosto* returned to Colombia in 1975 after a lengthy refit in USA during which her engines were extensively overhauled.

VEINTE DE JULIO *1975, Dhr. J. van der Woude*

SIETE DE AGOSTO *1975, Dhr. J. van der Woude*

1 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SANTANDER (ex-USS *Waldron*, DD 699)	D 03	Federal S.B. Co	16 Nov 1943	26 Mar 1944	8 June 1944

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·5 × 5·8)*
Guns: 6—5 in *(127 mm)*/38 (twins)
A/S weapons: 2 fixed Hedgehogs; 6 Mk 32 torpedo tubes (triple); facilities for small helicopter
Main engines: 2 geared turbines; 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Range, miles: 4 500 at 16 knots
Complement: 274

Santander was modernised under the Fram II programme and transferred by sale on 30 October 1973.

Fire control: Mk 37 director with Mk 25 radar.

Radar: Search: SPS 10 and 40.

Sonar: SQS 30. VDS removed before transfer.

SANTANDER *1975, Dhr. J. van der Woude*

FRIGATES

0 + 4 "TYPE FS 1500"

Displacement, tons: 1 850
Aircraft: 1 helicopter
Missiles: SAM; Sea Sparrow
Guns: 1—76 mm; 2—40 mm (twin) Breda; 2—30 mm Oerlikon (twin)
Main engines: 4 MTU 20V 1163 TB62 diesels; 16 380 hp; 2 shafts
Speed, knots: 28
Complement: 90

Letter of intent signed with Howaldtswerke Deutsche Werft in 1980.

1 Ex-US "COURTNEY" CLASS

Name	*No.*	*Builders*	*Commissioned*
BOYACA (ex-USS *Hartley* DE 1029)	DE 16	New York S.B. Corporation	26 Jan 1957

Displacement, tons: 1 450 standard; 1 914 full load
Dimensions, feet (metres): 314·5 × 36·8 × 13·6 *(95·9 × 11·2 × 4·1)*
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 6 Mk 32 torpedo tubes (triple); 1 DC rack
Main engines: 1 De Laval geared turbine; 20 000 shp; 1 shaft
Boilers: 2 Foster-Wheeler
Speed, knots: 25
Range, miles: 4 500 at 15 knots
Complement: 161 (11 officers, 150 men)

Transferred on 8 July 1972 by sale. Helicopter platform in X position.

Radar: SPS 6 and 10.

Sonar: SQS 23.

BOYACA *1974*

PATROL SHIPS

3 Ex-US "CHEROKEE" CLASS

Name	*No.*	*Builders*	*Commissioned*
SEBASTIAN DE BELAL CALZAR (ex-USS *Carib*, ATF 82)	RM 73	Charleston S.B. and D.D. Co	24 July 1943
RODRIGO DE BASTIDAS (ex-USS *Hidatsa*, ATF 102)	RM 74	Charleston S.B. and D.D. Co	25 Apr 1944
— (ex-USS *Jicarilla*, ATF 104)	RM 76	Charleston S.B. and D.D. Co	26 June 1944

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Gun: 1—3 in *(76 mm)*/50 (single Mk 22)
Main engines: Diesel-electric; 4 diesels; 1 shaft; 3 000 bhp = 15 knots
Complement: 75

Built as fleet tugs. Launched 7 February 1943, 29 December 1943 and 25 February 1944 respectively. All three placed in reserve in USA July 1963. Transferred by sale on 15 March 1979 for duties as patrol ships.

LIGHT FORCES

3 "ARAUCA" CLASS RIVER GUNBOATS

Name	*No.*	*Builders*	*Commissioned*
RIOHACHA	CF 35	Union Industrial de Barranquilla	1956
LETICIA	CF 36	Union Industrial de Barranquilla	1956
ARAUCA	CF 37	Union Industrial de Barranquilla	1956

Displacement, tons: 184 full load
Dimensions, feet (metres): 163·5 × 23·5 × 2·8 *(49·9 × 7·2 × 0·9)*
Guns: 2—3 in *(76 mm)*/50; 4—20 mm
Main engines: 2 Caterpillar diesels; 916 bhp = 14 knots
Range, miles: 1 890 at 14 knots
Complement: 43 (*Leticia* 39 and 6 orderlies)

Launched in 1955. *Leticia* has been equipped as a hospital ship with six beds—reported as disarmed.

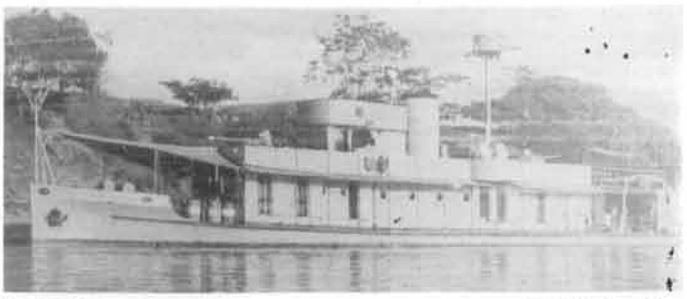
RIOHACHA *1966, Colombian Navy*

1 "BARRANQUILLA" CLASS RIVER GUNBOAT

Name	*No.*	*Builders*	*Commissioned*
CARTAGENA	CF 33	Yarrow & Co Ltd, Scotstoun	1930

Displacement, tons: 142
Dimensions, feet (metres): 137·8 × 23·5 × 2·8 *(42 × 7·2 × 0·9)*
Guns: 1—3 in *(76 mm)*; 1—40 mm; 4 MGs
Main engines: 2 Gardner semi-diesels; 2 shafts working in tunnels; 600 hp = 15·5 knots
Oil fuel (tons): 24
Complement: 39

Launched on 22 March 1930.



CARTAGENA *1971, Colombian Navy*

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
ESPARTANA	GC 100	Ast. Naval, Cartagena	1950

Displacement, tons: 50
Dimensions, feet (metres): 96 × 13·5 ×4 *(29·3 × 4·1 × 1·2)*
Gun: 1—20 mm
Main engines: 2 diesels; 300 bhp = 13·5 knots

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
CAPITAN R. D. BINNEY	GC 101	Ast. Naval, Cartagena	1947

Displacement, tons: 23
Dimensions, feet (metres): 67 × 10·7 × 3·5 *(20·4 × 3·3 × 1·1)*
Main engines: Diesels; 115 bhp = 13 knots

Buoy and lighthouse inspection boat. Named after first head of Colombian Naval Academy, Lt-Commander Ralph Douglas Binney, RN.

1 RIVER PATROL CRAFT

CALIBIO LR 127

Originally a class of eight.

5 RIVER PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
JUAN LUCIO	LR 122	Ast. Naval, Cartagena	1953
ALFONSO VARGAS	LR 123	Ast. Naval, Cartagena	1952
FRITZ HAGALE	LR 124	Ast. Naval, Cartagena	1952
HUMBERTO CORTES	LR 126	Ast. Naval, Cartagena	1953
CARLOS GALINDO	LR 128	Ast. Naval, Cartagena	1954

Displacement, tons: 33
Dimensions, feet (metres): 76 × 12 × 2·8 *(23·2 × 3·7 × 0·8)*
Guns: 1—20 mm; 4 mortars
Main engines: 2 General Motors diesels; 280 bhp = 13 knots
Complement: 10

2 RIVER PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
DILIGENTE	LR 138	Ast. Naval, Cartagena	1952
VENGADORA	LR 139	Ast. Naval, Cartagena	1954

Originally a class of eight.

COAST GUARD

Name	*No.*	*Builders*	*Commissioned*
RODRIGUEZ	AN 1	—	—

40 ft CGB.

Name	*No.*	*Builders*	*Commissioned*
OLAYA HERRERA	AN 203	Ast. Magdalena Barranquilla	1960

Displacement, tons: 40
Dimensions, feet (metres): 68·8 pp × 12·8 × 3·5 *(21 × 3·9 × 1·1)*
Gun: 1—5 mm Browning
Main engines: 2 Merbens diesels; 570 bhp = 20 knots

Name	*No.*	*Builders*	*Commissioned*
PEDRO GUAL	AN 204	Schurenstedt KG Barden Fleth	1964
ESTEBAN JARAMILLO	AN 205	Schurenstedt KG Barden Fleth	1964
CARLOS E. RESTREPO	AN 206	Schurenstedt KG Barden Fleth	1964

Displacement, tons: 85
Dimensions, feet (metres): 107·8 pp × 18 × 6 *(32·9 × 5·5 × 1·8)*
Gun: 1—20 mm
Main engines: 2 Maybach (MTU) diesels; 2 450 bhp = 26 knots

PEDRO GUAL *1965, Colombian Navy*

Name	*No.*	*Builders*	*Commissioned*
JORGE SOTO DEL CORVAL	AN 207	Finland	1971
CARLOS ALBAN	AN 208	Finland	1971
NITO RESTREPO	AN 209	Finland	1971

Displacement, tons: 130 full load
Dimensions, feet (metres): 108 × 18 × 5·9 *(33 × 5·5 × 1·8)*
Guns: 2—20 mm
Main engines: 2 (MTU) diesels; 2 500 bhp = 17 knots
Complement: 20

Near sisters to Finnish "Ruissalo" class.

CARLOS ALBAN *1971, Colombian Navy*

Name	*No.*	*Builders*	*Commissioned*
GENERAL VASQUES COBO	AN 202	Lürssen	1955

Displacement, tons: 146
Dimensions, feet (metres): 124·7 × 23 × 5 *(38 × 7 × 1·5)*
Gun: 1—40 mm
Main engines: 2 Maybach (MTU) diesels; 2 500 bhp = 18 knots
Complement: 20

Launched on 27 September 1955.

SURVEY VESSELS

Name	*No.*	*Builders*	*Commissioned*
SAN ANDRES (ex-USS *Rockville*, PCER 851)	BO 151	Pullman Standard Car Co, Chicago	15 May 1944

Displacement, tons: 674 standard; 968 full load
Dimensions, feet (metres): 184·5 × 33·6 × 9·5 *(56·3 × 10·2 × 2·9)*
Main engines: 2 diesels; 2 shafts; 1 800 bhp = 15 knots
Complement: 50

Former US patrol rescue escort vessel converted in US Navy for surveying duties. Laid down on 18 October 1943, launched on 22 February 1944. Acquired on 5 June 1969.

Name	*No.*	*Builders*	*Commissioned*
QUINDIO (ex-US *YFR 443*)	BO 153	Niagara S.B. Corporation	11 Nov 1943

Displacement, tons: 380 light; 600 full load
Dimensions, feet (metres): 131 × 29·8 × 9 *(40 × 9·1 × 2·7)*
Main engines: 2 diesels; 300 hp = 10 knots
Complement: 17

Transferred by lease in July 1964 and by sale on 31 March 1978.

Name	*No.*	*Builders*	*Commissioned*
GORGONA	FB 161	Lidingoverken, Sweden	1955

Displacement, tons: 574
Dimensions, feet (metres): 135 × 29·5 × 9·3 *(41·2 × 9 × 2·8)*
Main engines: 2 Nohab diesels; 910 bhp = 13 knots
Complement: 45

Formerly classified as a tender.

TANKER

1 Ex-US "PATAPSCO" CLASS (AOG)

Name	*No.*	*Builders*	*Commissioned*
TUMACO (ex-USS *Chewaucan*, AOG 50)	BT 67	Cargill Inc, Savage, Minn.	19 Feb 1945

Displacement, tons: 1 850 light; 4 335 full load
Dimensions, feet (metres): 310·8 × 48·5 × 15·7 *(94·8 × 14·8 × 4·8)*
Guns: 2—3 in *(76 mm)*
Main engines: Diesel-electric; 2 shafts; 3 300 bhp = 14 knots
Range, miles: 8 350 at 11·5 knots
Complement: 43

Transferred on 1 July 1975 by sale.

TUMACO (As USS *Chewaucan*) *1970, A. and J. Pavia*

TRANSPORTS

Name	*No.*	*Builders*	*Commissioned*
CIUDAD DE QUIBDO (ex-*Shamrock*)	TM 43	Gebr Sander Deltzijl	1953 (see note)

Displacement, tons: 633
Dimensions, feet (metres): 165 × 23·5 × 9 *(50·3 × 7·2 × 2·7)*
Main engines: 1 MAN diesel; 1 shaft; 390 bhp = 11 knots
Oil fuel, tons: 32
Complement: 12

Ex-Dutch coaster *Shamrock* sold to Colombia by commercial firm in March 1953.

Name	*No.*	*Builders*	*Commissioned*
MARIO SERPA	TF 51	Ast. Naval, Cartagena	1954
HERNANDO GUTIERREZ	TF 52	Ast. Naval, Cartagena	1955
SOCORRO (ex-*Alberto Gomez*)	BD 33	Ast. Naval, Cartagena	1956

Displacement, tons: 70
Dimensions, feet (metres): 82 × 18 × 2·8 *(25 × 5·5 × 0·9)*
Main engines: 2 General Motors diesels; 260 bhp = 9 knots
Oil fuel, tons: 4
Range, miles: 650 at 9 knots
Complement: 12 (berths for 48 troops and medical staff)

River transports. Named after Army officers. *Socorro* was converted in July 1967 into a floating surgery. *Hernando Gutierrez* and *Mario Serpa* were converted into dispensary ships in 1970.

FLOATING DOCKS

Note: The transfer of US ARD 14 and ARD 28 approved by US Congress in 1980.

MAYOR ARIAS

Displacement, tons: 700
Capacity, tons: 165
Length, feet (metres): 140 *(42·7)*

Note: It is reported that the 6 700 ton *Rodriguez Zamora* (ex-ARD 28), the small floating dock *Manuel Lara*, the floating workshop *Mantilla* (ex-YR 66) purchased April 1979 and the repair craft *Victor Cubillos* (ex USS YFND 6) purchased on 31 March 1978, are in use by Compania Colombiana de Astilleros Limitada (CONASTIL), Cartagena which is the former naval dockyard still owned by the navy.

Also listed: *Sabogal*

TUGS

PEDRO DE HEREDIA (ex-USS *Choctaw*, ATF 70) RM 72

Displacement, tons: 1 235 standard; 1 764 full load
Dimensions, feet (metres): 205 × 38·5 × 15·5 *(62·5 × 11·7 × 4·7)*
Main engines: 4 diesels; electric drive; 3 000 bhp = 15 knots
Complement: 75

Former US Navy's ocean tug of the "Cherokee" class. Launched on 18 October 1942 and commissioned on 21 April 1943.
Transferred 1961 and by sale on 31 March 1978. Sister to three of this class used as Patrol Ships.

1 Ex-US "SOTOYOMO" CLASS

BAHIA UTRIA (ex-USS *Kalmia* ATA 184) RM 75

Displacement, tons: 534 standard; 858 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Gun: 1—3 in
Main engines: 2 General Motors diesel-electric; 1 shaft; 1 500 bhp = 13 knots
Complement: 45

Launched on 29 August 1944 and commissioned on 6 November 1944. Transferred from the US Navy on 1 July 1971 on lease and by purchase on 31 March 1978.

ANDAGOYA RM 71

Measurement, tons: 117 gross
Dimensions, feet (metres): 92·6 × 20 × 10 *(28·2 × 6·1 × 3·05)*
Main engines: Caterpillar diesel; 400 bhp = 10 knots

Launched in 1928. Re-engined in 1955.

CAPITAN CASTRO RR 81
CANDIDO LEGUIZAMO RR 82
CAPITAN ALVARO RUIZ RR 84
CAPITAN RIGOBERTO GIRALDO RR 86
CAPITAN VLADIMIR VALEK RR 87
TENIENTE LUIS BERNAL RR 88
JOVES FIALLO RR 90

Displacement, tons: 50
Dimensions, feet (metres): 63 × 14 × 2·5 *(19·2 × 4·3 × 0·8)*
Main engines: 2 General Motors diesels; 260 bhp = 9 knots

TENIENTE SORZANO (ex-USS *YTL 231*)

Displacement, tons: 54
Dimensions, feet (metres): 65·7 × 17·5 × 9 *(20 × 5·3 × 2·7)*
Main engines: 6-cyl diesel; 240 bhp

Formerly on loan—purchased on 31 March 1978. Dockyard tug at Conastil.

TENIENTE MIGUEL SILVA RR 89

Dimensions, feet (metres): 73·3 × 17·5 × 3 *(22·4 × 5·3 × 0·9)*
Main engines: 2 diesels; 260 hp = 9 knots

River tug built by Union Industrial (UNIMAL), Barranquilla

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
GLORIA	—	Bilbao	1968

Displacement, tons: 1 300
Dimensions, feet (metres): 212 × 34·8 × 21·7 *(64·7 × 10·6 × 6·6)*
Main engines: Auxiliary diesel; 500 bhp = 10·5 knots

Sail training ship. Barque rigged. Hull is entirely welded.
Sail area: 1 675 sq yards *(1 400 sq metres)*.

GLORIA *7/1976, USN*

COMORO ISLANDS

Three of the four islands of this group joined in a unilateral declaration of independence in July 1975. This has been legitimised by France who has provided the following ship. The only port of any pretensions is Moroni.

Mercantile Marine

Lloyd's Register of Shipping:
3 vessels of 1 116 tons gross

1 Ex-BRITISH LCT(8)

Ex-LCT 9061 (ex-HMS *Buttress*, 4099)

Displacement, tons: 657 standard; 1 000 full load
Dimensions, feet (metres): 231·2 × 39 × 5·9 *(70·5 × 11·9 × 1·8)*
Guns: 2—20 mm; 1—120 mm mortar
Main engines: 4 Paxman diesels; 2 shafts; 1 840 bhp = 9 knots
Complement: 29

Built in the UK in 1945. Bought by France in 1965. Transferred 1976.

CONGO

The People's Republic of Congo, which became independent on 15 August 1960, formed a naval service, but the patrol vessel *Reine N' Galifourou* (ex-French P 754) which was transferred on 16 November 1962 was returned to France on 18 February 1965 and then re-transferred to Senegal as *Siné Saloum*.

Ministerial

Minister of Defence:
Major Marien N'gouabi

Personnel

(a) 1981: 200 officers and men
(b) Voluntary service

Base

Pointe-Noire.

Mercantile Marine

Lloyd's Register of Shipping:
15 vessels of 6 784 tons gross

Note: Reported that three Patrol Craft were ordered in Spain in 1980.

1 Ex-SOVIET "SHERSHEN" CLASS

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm L65 (twins)
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 3 diesels; 3 shafts; 13 200 hp = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

Transferred December 1979.

3 Ex-CHINESE "SHANGHAI II" CLASS

401 402 403

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twins); 4—25 mm (twins)
A/S armament: 8 DCs (may be removed)
Mines: Mine rails can be fitted for up to 10 mines
Main engines: 4 diesels; 4 800 hp = 30 knots
Complement: 25

Probably transferred in 1974.

"SHANGHAI II" Class

4 "YULIN" CLASS (RIVER PATROL CRAFT)

Displacement, tons: 10
Dimensions, feet (metres): 40 × 9·5 × 3·5 *(12·2 × 2·9 × 1·1)*
Guns: 2—14·5 mm (twin); 2—12·7 mm
Main engine: 1 diesel; 300 bhp; 1 shaft = 22 knots
Complement: 10

Transferred by China in 1966.

MISCELLANEOUS

It is reported that up to 12 small craft with outboard motors are employed on river patrol.

COSTA RICA

Personnel

(a) 1981: 90 officers and men
(b) Voluntary service

Ports

Limon, Golfito, Puntarenas, Puerto Simon

Mercantile Marine

Lloyd's Register of Shipping:
26 vessels of 20 333 tons gross

1 "SWIFT 105 FT" CLASS (FAST PATROL CRAFT)

Displacement, tons: 103
Dimensions, feet (metres): 105 × 24 × 5 *(32 × 7·3 × 1·5)*
Main engines: 2 MTU diesels; 7 000 hp = 32 knots
Range, miles: 1 200 at 18 knots
Complement: 16

Built by Swiftships, Morgan City in 1979.

5 "SWIFT 65 FT" CLASS (COASTAL PATROL CRAFT)

FP 406 407 408 409 410

Displacement, tons: 36·3
Dimensions, feet (metres): 65·3 × 18·4 × 5·2 *(19·9 × 5·6 × 1·6)*
Main engines: 3 General Motors diesels; 3 shafts; 1 590 hp = 27 knots
Range, miles: 2 000 at 22 knots
Complement: 5

Built by Swiftships, Morgan City in 1979.

3 COASTAL PATROL CRAFT

401 402 403

Displacement, tons: 10
Dimensions, feet (metres): 41× 10 × 2·3 *(12·5 × 3·1 × 0·7)*
Gun: 1 MG

Built in mid-1950s. Of US Coast Guard 40 ft type.

Note: An armed tug is also reported.

CUBA

Ministerial

Minister of the Revolutionary Armed Forces:
Raul Castro Ruz

Senior Appointment

Commander-in-Chief:
Commodore Aldo Santamaria

Personnel

(a) 1981: 6 000 (380 officers, 220 petty officers and 5 400 men)
(b) 3 years' national service

General

Cuba has the highest estimated annual defence expenditure in Central America and the Caribbean at about £120 million, a fair proportion of this being on Soviet aid. The navy is the smallest of the three services but, with an adequate budget and Soviet assistance in training, must be assessed as having a reasonable level of tactical and material efficiency.
The addition of a submarine branch, hydrofoils and the first effective MCM forces is taking this fleet into a new league.

Naval Establishments

Naval Academy:
At Mariel, for officers and cadets
Naval School:
At Morro Castle, for petty officers and men
Naval Bases:
Canasi, Cienfuegos, Havana, Mariel, Punta Ballenatos.

Maritime Airforce

A helicopter force of 25 Mi-4 (Hound) and 30 Mi-1 (Hare) from USSR is in existence although these are probably all operated by the Air Force.

Strength of the Fleet

Type	*Active*	*Building or (Reserve)*
Submarines	2	(1)
Frigate	—	(1)
Large Patrol Craft	14	—
Fast Attack Craft (Missile)	21	(4)
Fast Attack Craft (Torpedo)	22	—
Fast Attack Craft (Patrol)	16	—
Coastal Patrol Craft	12	—
Minesweepers	8	—
LCMs	7	—
Survey Vessels and Craft	13	—
Miscellaneous	9	—
Frontier Guard	14	—

Mercantile Marine

Lloyd's Register of Shipping:
405 vessels of 881 260 tons gross

DELETIONS

Frigates

1975 *Antonio Maceo, Jose Marti* (ex-US PF Type) sunk as targets.

Corvette

1976 *Caribe* (ex-US PCER)

Light Forces

1976 *Habana, Las Villas, Oriente, Pinar del Rio, Leoncio, Prado, GC 32, GC 33, GC 34, GC 11, GC 13, GC 14, R 41, R 42*
1979 2 "Kronshtadt" class, 2 "SO 1" class, 6 "P6" class

Tug

1976 *Diez de Octubre*

SUBMARINES

2 Ex-SOVIET "FOXTROT" CLASS

Displacement, tons: 1 950 surfaced; 2 500 dived
Dimensions, feet (metres): 300·1 × 26·2 × 20 *(91·5 × 8 × 6·1)*
Torpedo tubes: 6—21 in *(533 mm)* (bow); 4—16 in *(406 mm)* (stern); 22 torpedoes carried
Main machinery: 3 diesels; 6 000 bhp; 3 electric motors; 6 000 bhp; 3 shafts
Speed, knots: 18 surfaced; 16 dived
Range, miles: 20 000 surfaced, cruising
Complement: 75

First arrived Cuba 7 February 1979, second in January 1980.

"FOXTROT" Class — *USN*

1 Ex-SOVIET "WHISKEY" CLASS

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 15·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern)
Main machinery: 2 diesels; 4 000 bhp; 2 electric motors; 2 700 hp
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots surfaced
Complement: 54

Arrived Cuba May 1979. Probably non-operational and in use as charging station and training boat.

"WHISKEY" Class

FRIGATES

One of the three ex-US frigates of the PF type—believed to be *Maximo Gomez*—which was completed in 1944 and acquired in 1947 is still in existence as harbour hulk but has no operational value.

LIGHT FORCES

10 Ex-SOVIET "S0 I" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 170 standard; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (2 twin)
A/S weapons: Four 5-barrelled rocket launchers; DC rails
Mines: Can carry 12
Main engines: 3 diesels; 7 500 bhp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Six were transferred from the USSR by September 1964, and six more in 1967. Two were deleted in 1979.

Radar: Search:Pot Head.
IFF: High Pole A and Dead Duck.

"SO I" Class — *1970, USN*

4 Ex-SOVIET "KRONSHTADT" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 310 standard; 380 full load
Dimensions, feet (metres): 170·6 × 21·3 × 7 *(52 × 6·5 × 2·1)*
Guns: 1—3·5 in *(85 mm)*; 2—37 mm (twin); 6—14·5 mm (twins)
A/S weapons: 2 MBU 1800A; 2 DCTs; 2 DC racks
Mines: 6 on two racks at the stern
Main engines: 3 diesels; 3 shafts; 3 300 hp = 24 knots
Range, miles: 1 500 at 12 knots
Complement: 40

Transferred from the USSR in 1962. Two reported as paid off in 1979.

Radar: Surface: Ball End.
Navigation: Don.
IFF: High Pole A, Dead Duck.

Soviet "KRONSHTADT" Class

6 Ex-SOVIET "OSA I" and 5 "OSA II" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (2 twin, 1 fwd, 1 aft)
Main engines: 3 M503 (Osa I) M504 (Osa II) diesels; 12 000 bhp (Osa I), 15 000 (Osa II) = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Two boats of "Osa I" class were transferred to Cuba from the USSR in January 1972 and three in 1973. These were followed by one "Osa I" and one "Osa II" in mid-1976, one "Osa II" in December 1976 and one "Osa II" in mid-1978. Further two "Osa II" delivered in April and October 1979.

Radar: Search: Square Tie.
Fire control: Drum Tilt.
IFF: Square Head, High Pole A (I), High Pole B (II).

"OSA II" Class *9/1979, USN*

10 + 4 Ex-SOVIET "KOMAR" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 68 standard; 75 full load
Dimensions, feet (metres): 87·9 × 20·3 × 4·9 *(26·8 × 6·2 × 1·5)*
Missiles: SSM; 2—SS-N-2 (single launchers)
Guns: 2—25 mm (twin)
Main engines: 4 M50 diesels; 4 shafts; 4 800 bhp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

First twelve transferred in 1962. Last pair arrived in December 1966. Four had missiles removed in 1979 and will probably be deleted.

Radar: Surveillance: Square Tie.
IFF: Dead Duck, High Pole A.

"KOMAR" Class *1970, USN*

4 Ex-SOVIET "TURYA" CLASS (FAST ATTACK CRAFT—HYDROFOIL)

Displacement, tons: 190 standard; 220 full load
Dimensions, feet (metres): 128·7 × 25·1 × 5·9 *(39·3 × 7·7 × 1·8)*
Guns: 2—57 mm (twin, aft); 2—25 mm (twin, fwd)
Main engines: 3 M504 diesels; 15 000 hp; 3 shafts
Speed, knots: 40
Complement: 40

May have helicopter-type VDS. Transferred February 1979 (first pair) and February 1980 (second pair). No torpedo tubes.

Soviet "TURYA" Class (with torpedo tubes)

6 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (2 twin)
Torpedo tubes: 2—21 in *(533 mm)* (two single)
Main engines: 4 M50 diesels; 4 shafts; 4 800 hp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Transferred in 1962. Can carry mines or depth charges in place of torpedo tubes. Six deleted in 1979. Pennant numbers in 80/90 series.

Radar: Search: Pot Head.
IFF: Dead Duck, High Pole A.

"P 6" Class *1970, USN*

12 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 22 standard; 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·5 mm (twin)
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 400 bhp; 2 shafts = 50 knots
Range, miles: 400 at 13 knots
Complement: 12

Transferred from the USSR in 1962-64.

Radar: Search: Skin Head.
IFF: Dead Duck and High Pole.

"P 4" Class *1970*

16 Ex-SOVIET "ZHUK" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 60 full load
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 4—14·5 mm (twins)
Main engines: 2 M50 diesels; 2 shafts; 2 400 hp = 34 knots
Complement: 17

Transferred 1975-78. Revised total.

"ZHUK" Class

6 COASTAL PATROL CRAFT

SV 7 **SV 8** **SV 9** **SV 10** **SV 12** **SV 14**

Length, feet (metres): 40 *(12·2)*
Gun: 1—5 cal MG
Main engines: 2 General Motors diesels = 25 knots

Later boats of the SV type equipped with radar. Completed 1958.

6 COASTAL PATROL CRAFT

SV 1 **SV 2** **SV 3** **SV 4** **SV 5** **SV 6**

Displacement, tons: 6·15
Dimensions, feet (metres): 32 × 10 × 2·8 *(9·8 × 3·1 × 0·8)*
Main engines: 2 Chrysler Crown, 230 bhp = 18 knots

Auxiliary patrol boats for port patrol, launched in 1953.

MINE WARFARE FORCES

2 Ex-SOVIET "SONYA" CLASS (MINESWEEPERS/HUNTERS)

Displacement, tons: 350 standard; 400 full load
Dimensions, feet (metres): 159·1 × 23·9 × 6·2 *(48·5 × 7·3 × 1·9)*
Guns: 2—30 mm (twin); 2—25 mm (twin)
Mines: Can carry 5
Main engines: 2 diesels; 2 400 shp; 2 shafts = 18 knots
Complement: 43

Transferred August and December 1980.

Radar: Search/navigation: Don 2.
IFF: Two Square Head; one High Pole B.

"SONYA" Class *7/1976*

5 Ex-SOVIET "YEVGENYA" CLASS (MSI)

Displacement, tons: 70 standard; 80 full load
Dimensions, feet (metres): 79 × 16·4 × 3·9 *(24·1 × 5 × 1·2)*
Guns: 2—14·5 mm (twin)
Main engine: 1 M50 diesel; 1 200 hp = 12 knots
Range, miles: 1 000 at 9 knots
Complement: 10

First pair transferred mid-1978, third in 1979 and two more in early 1980.

Radar: Navigation: Don 2.
IFF: High Pole.

"YEVGENYA" Class *1976, S. Breyer*

1 Ex-POLISH "K 8" CLASS (MINESWEEPING BOAT)

Displacement, tons: 20 standard; 26 full load
Dimensions, feet (metres): 55·4 × 10·5 × 3·9 *(16·9 × 3·2 × 1·2)*
Guns: 2—14·5 mm (twin)
Mines: Can lay mines
Main engines: 2 diesels; 2 shafts; 700 hp = 18 knots
Complement: 6

Transferred in 1978.

AMPHIBIOUS FORCES

7 "T 4" CLASS LCMs

Displacement, tons: 94
Main engines: 2 diesels; 2 shafts; 400 hp = 9 knots

Obtained 1967-74. Mainly employed as harbour craft.

SURVEY VESSELS

SIBONEY H 101

Measurement, tons: 530

An ex-fishing trawler/buoy tender also used for cadet training.

TAINO H 102

Of 1 100 tons.

5 MOTOR LAUNCHES

No details available but all used for surveying.

6 Ex-SOVIET "NYRYAT 1" CLASS

H 91 **H 92** **H 93** **H 94** **H 95** **H 96**

Displacement, tons: 145
Dimensions, feet (metres): 93 × 18 × 5·5 *(28·4 × 5·5 × 1·7)*
Main engine: Diesel; 450 hp; 1 shaft = 12·5 knots
Range, miles: 1 500 at 10 knots
Complement: 15

MISCELLANEOUS

1 Ex-SOVIET "YELVA" CLASS (DIVING TENDER)

Displacement, tons: 295
Dimensions, feet (metres): 132·8 × 26·2 × 6·6 *(40·5 × 8 × 2)*
Main engines: Diesels = 12·5 knots

Built in early 1970s, transferred 1973. Two 1·5 ton cranes.

Radar: Spin Trough.

Soviet "YELVA" Class *1973*

2 LIGHTHOUSE TENDERS

ENRIQUE COLLAZO (ex-*Joaquin Godoy*)

Displacement, tons: 815
Dimensions, feet (metres): 211 × 24 × 9 *(64·3 × 7·3 × 2·7)*
Main engines: Triple expansion; 2 shafts; 672 ihp = 8 knots

Built at Paisley, Scotland. Launched in 1906. Acquired in 1950 from Cuban Mercantile Marine.

BERTHA SF 10

Displacement, tons: 98
Dimensions, feet (metres): 104 × 19 × 11 *(31·7 × 5·8 × 3·4)*
Main engines: 2 Gray Marine diesels; 450 bhp = 10 knots

Launched in 1944.

1 Ex-SOVIET "OKHTENSKY" CLASS (OCEAN TUG)

CARIBE

Displacement, tons: 835 standard; 992 full load
Dimensions, feet (metres): 143 × 34 × 15 *(43·6 × 10·4 × 4·6)*
Guns: 1—3 in *(76 mm)*; 2—20 mm.
Main engines: 2 BM diesels; 2 electric motors; 2 shafts; 1 875 bhp = 14 knots
Oil fuel, tons: 187
Complement: 34

Transferred in 1976 to replace *Diez de Octubre*. Name taken from deleted corvette.

GRANMA A 11

Yacht which reached Cuba on 2 December 1956 with Dr Fidel Castro and the men who began the liberation war. Historic vessel incorporated into the Navy as an Auxiliary.

3 HARBOUR AUXILIARIES

A1 **A2** **A3**

Displacement, tons: 58
Dimensions, feet (metres): 74 × 15 × 5 *(22·6 × 4·6 × 1·5)*
Gun: 1 MG
Main engines: 2 Gray Marine diesels; 2 shafts; 225 hp

Built in USA 1949.

FRONTIER GUARD

A number of small craft operate under the direction of the Ministry of the Interior. Pennant numbers painted in red.

GF 101 **GF 102** **GF 107**

Similar to US Coast Guard 70 ft craft.

GF 528 **GF 720** **GF 725** **GF 825**

Similar to US Coast Guard 40 ft craft.

GUANABACOA

Of 22 knots, built in Cadiz.

CAMILO CIENFUEGOS
ESCAMBRAY
MACEO
CUARTEL MONCADA
FINLAY
MARTI

Six fast craft built in Spain 1971-72.

CYPRUS

General

For a considerable period six ex-Soviet "P 4" class and two ex-German "R" boats served in Cypriot waters. However the majority were sunk during the Turkish operations of July 1974 and one was stranded and lost.

Mercantile Marine

Lloyd's Register of Shipping:
688 vessels of 2 091 089 tons gross

New Construction

Two Fast Attack Craft (Missile) ordered from Chantiers Navals de l'Esterel were not taken up and were transferred to Greece as *Kelefstis Stamou* and *Dropos Antionio*. One patrol craft, *Aphrodite*, has been acquired.

CZECHOSLOVAKIA

Although a navy as such does not exist there is a river patrol force, the personnel of which wear naval-type uniforms. About 1 200 strong with some 20 river patrol craft.

Mercantile Marine

Lloyd's Register of Shipping:
19 vessels of 155 319 tons gross

DENMARK

Ministerial

Minister of Defence:
P. Søgaard

Headquarters' Appointments

Commander-in-Chief:
Rear Admiral N. F. Lange
Flag Officer Denmark:
Rear-Admiral F. C. Heisterberg-Andersen

Diplomatic Representation

Defence Attaché, Bonn:
Colonel J. C. J. R. Almar (A)
Defence Attaché, London:
Colonel H. H. Prince Georg of Denmark, KCVO
Assistant Defence Attaché, London:
Commander B. O. Sørensen
Defence Attaché, Washington:
Captain H. Nielsen (N)

Personnel

(a) 1981: 1 345 officers, 3 345 regular ratings,
1 380 national service ratings.
2 490 civilians.
Reserves: 13 640.
Naval Home Guard: 5 000.
(b) 9 months' national service

Navy Estimate

1977-78: 775 700 000 Kr (Apr 1976 level).

Naval Bases

Copenhagen, Korsør, Frederikshavn, Århus (NHQ)
Grønnedal (Greenland)
Thorshavn (Faeroes)

Naval Air Arm

Seven Lynx helicopters (deliveries 1980-81 to replace Alouettes)
Eight Alouette III helicopters (being replaced)
Naval helicopters owned and operated by navy but form part of joint naval/air force squadron 722 based at Värlöse near Copenhagen. Air force complement of squadron is eight S-61A SAR helicopters. All servicing and maintenance by air force.
Air Force: LRMP aircraft—three Gulf Stream aircraft ordered 1979 for delivery in 1980-81.

Prefix to Ships' Names

HDMS

Coast Defence

There are forts at Stevas and Langeland (on Southern approaches to Sound and Great Belt) armed with 150 mm and 40 mm guns. Six radar stations and a number of coast watching stations in the area.

Command and Control

It was originally the intention to have all government vessels under The Directorate of Waters (Farvandsdirektoratet). However the Ministry of Trade and Shipping now run the icebreakers and some training ships (the icebreakers are maintained by the navy and are based at Frederikshavn in the summer) while the Ministry of the Environment (Miljøministeriet) control two new Pollution Control Ships (with another under construction) based at Copenhagen and Korsør (both manned and maintained by the navy). Survey ships are run by the Farvandsdirektoratet Nautisk Afdeling (Administration of Navigation and Hydrography) under the Ministry of Defence and the Ministry of Fisheries have four rescue vessels and an "Osprey" class.

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Submarines (Patrol)	6	—
Frigates	8	2
Corvettes	2	—
Fast Attack Craft (Missile)	10	—
Fast Attack Craft (Torpedo)	6	—
Large Patrol Craft	22	(2)
Coastal Patrol Craft	8	—
Minelayers	7	—
Minesweepers (Coastal)	8	—
Tankers (Small)	2	—
Icebreakers	3	1
Royal Yacht	1	—
Naval Home Guard	35	—
Survey Ship and craft (see Icebreakers)	7	—

Appearance

All ships are light grey with the exception of fast attack craft, "Daphne" class and tankers which are olive green, the Royal Yacht which has a white hull and yellow superstructure and the icebreakers which have black hulls and yellow superstructure.

Mercantile Marine

Lloyd's Register of Shipping:
1 253 vessels of 5 390 365 tons gross

DELETIONS

Corvettes

1974 *Diana* ("Triton" class)
1978 *Flora* ("Triton" class)

Fast Attack Craft

1974 6 "Flyvefisken" class (scrapped May 1976)
1977 4 "Falken" class (in reserve)

Large Patrol Craft

1978 *Havmanden, Tejsten*

Coastal Patrol Craft

1975 Y 354, Y 359, *Ertholm, Lindholm*
1976 *Faeno*

Mine Warfare Forces

1974 2 "Lougen" class Minelayers
4 "Vig" class Inshore Minesweepers

Tender

1974 *Henrik Gerner* (sold for scrap in July 1976)

Icebreaker

1975 *Storebjørn*

PENNANT LIST

Submarines

S 320	Narhvalen
S 321	Nordkaperen
S 326	Delfinen
S 327	Spaekhuggeren
S 328	Tumleren
S 329	Springeren

Frigates and Corvettes

F 340	Beskytteren
F 344	Bellona
F 347	Triton
F 348	Hvidbjørnen
F 349	Vaedderen
F 350	Ingolf
F 351	Fylla
F 352	Peder Skram
F 353	Herluf Trolle
F 354	Niels Juel
F 355	Olfert Fischer
F 356	Peter Tordenskjold

Light Forces

P 510	Søløven
P 511	Søridderen
P 512	Søbjørnen

Light Forces

P 513	Søhesten
P 514	Søhunden
P 515	Søulven
P 530	Daphne
P 531	Dryaden
P 533	Havfruen
P 534	Najaden
P 535	Nymfen
P 536	Neptun
P 537	Ran
P 538	Rota
P 540	Bille
P 541	Bredal
P 542	Hammer
P 543	Huitfeldt
P 544	Krieger
P 545	Norby
P 546	Rodsteen
P 547	Sehested
P 548	Suenson
P 549	Willemoes
Y 300	Barsø
Y 301	Drejø
Y 302	Romsø
Y 303	Samsø
Y 304	Thurø
Y 305	Vejrø
Y 306	Farø
Y 307	Laesø
Y 308	Rømø
Y 384	Maagen

Light Forces

Y 385	Mallemukken
Y 386	Agdleq
Y 387	Agpa
Y 388	Tulugaq
Y 389	—

Mine Warfare Forces

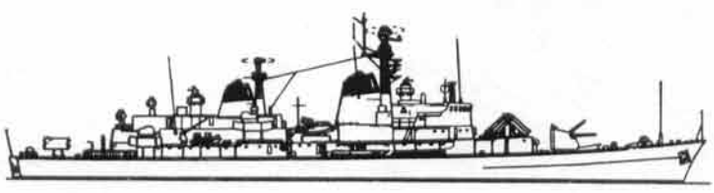
N 42	Langeland
N 43	Lindormen
N 44	Lossen
N 80	Falster
N 81	Fyen
N 82	Møen
N 83	Sjaelland
M 571	Aarøsund
M 572	Alssund
M 573	Egernsund
M 574	Grønsund
M 575	Guldborgsund
M 576	Omøsund
M 577	Ulvsund
M 578	Vilsund

Auxiliaries

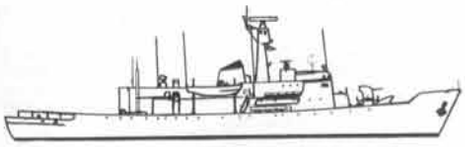
A 540	Dannebrog
A 568	Rimfaxe
A 569	Skinfaxe

Naval Home Guard

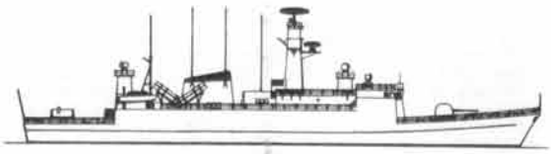
MHV 1	
MHV 51	
MHV 54	
MHV 55	
MHV 57	
MHV 60	
MHV 62	
MHV 63	
MHV 65	
MHV 67	
MHV 68	
MHV 70	
MHV 71	
MHV 72	
MHV 74	
MHV 75	
MHV 81	Askø
MHV 82	Enø
MHV 83	Manø
MHV 84	Baagø
MHV 85	Hjortø
MHV 86	Lyø
MHV 90	
MHV 91	
MHV 92	
MHV 93	
MHV 94	
MHV 95	



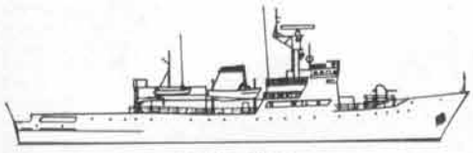
"PEDER SKRAM" Class



"HVIDBJORNEN" Class



"NIELS JUEL" Class

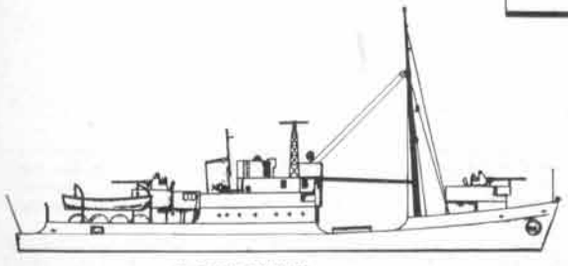


BESKYTTEREN

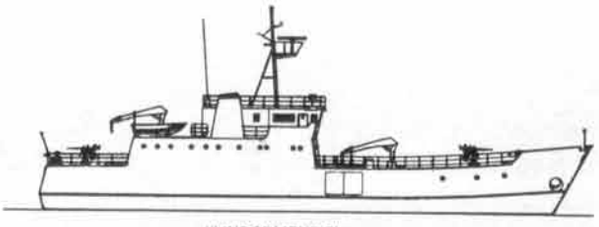
"FALSTER" Class

Note: Drawings above are at a scale of 1:1200.
The drawings below are at 1:600.

"DAPHNE" Class



"LANGELAND" Class



"LINDORMEN" Class

SUBMARINES

Note: Denmark is planning to build four new submarines. It is likely that these will eventually be of the same design as the German/Norwegian Type 210 of about 750 tons.

2 "NARHVALEN" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
NARHVALEN	S 320	Royal Dockyard, Copenhagen	16 Feb 1965	10 Sep 1968	27 Feb 1970
NORDKAPEREN	S 321	Royal Dockyard, Copenhagen	20 Jan 1966	18 Dec 1969	22 Dec 1970

Displacement, tons: 420 surfaced; 450 dived
Dimensions, feet (metres): 145·3 × 15 × 12·5 *(44·3 × 4·6 × 3·8)*
Torpedo tubes: 8—21 in *(533 mm)* bow
Main machinery: 2 MB diesels; 1 500 bhp; 1 electric motor; 1 500 bhp
Speed, knots: 12 surfaced; 17 dived
Complement: 22

These coastal submarines are similar to the West German improved Type 205 and were built under licence at the Royal Dockyard, Copenhagen with modifications for Danish needs. Active and passive sonar.
Narhvalen came off the blocks in dock and sank on 21 September 1979. Salvaged.

NARHVALEN

11/1980, L. and L. van Ginderen

4 "DELFINEN" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DELFINEN	S 326	Royal Dockyard, Copenhagen	1 July 1954	4 May 1956	16 Sep 1958
SPAEKHUGGEREN	S 327	Royal Dockyard, Copenhagen	1 Dec 1954	20 Feb 1957	27 June 1959
TUMLEREN	S 328	Royal Dockyard, Copenhagen	22 May 1956	22 May 1958	15 Jan 1960
SPRINGEREN	S 329	Royal Dockyard, Copenhagen	3 Jan 1961	26 Apr 1963	22 Oct 1964

Displacement, tons: 595 surfaced; 643 dived
Dimensions, feet (metres): 177·2 × 15·4 × 13·1 *(54 × 4·7 × 4)*
Torpedo tubes: 4—21 in *(533 mm)*
Main machinery: 2 Burmeister & Wain 12-cyl diesels; 1 200 bhp; 2 electric motors; 1 200 hp
Speed, knots: 16 surfaced and dived
Range, miles: 4 000 at 8 knots
Complement: 33

Active and passive sonar. Now reaching the end of their hull lives.

TUMLEREN

1975, Royal Danish Navy

FRIGATES

2 "PEDER SKRAM" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
PEDER SKRAM	F 352	Helsingörs J. & M.	25 Sep 1964	20 May 1965	30 June 1966
HERLUF TROLLE	F 353	Helsingörs J. & M.	18 Dec 1964	8 Sep 1965	16 Apr 1967

Displacement, tons: 2 030 standard; 2 720 full load
Dimensions, feet (metres): 396·5 × 39·5 × 11·8 *(112·6 × 12 × 3·6)*
Missiles: SSM: 8 Harpoon (two 4-cell launchers); SAM: Sea Sparrow (one 4-Cell launcher with 16 missiles)
Guns: 2—5 in *(127 mm)*/38 (twin Mk 38); 4—40 mm/60
Torpedo tubes: 4—21 in *(533 mm)* for wire-guided and A/S torpedoes
A/S weapons: DCs
Main engines: CODOG:—2 General Motors 16-567 D diesels; 4 800 hp; 2 Pratt & Whitney PWA GG 4A-3 gas turbines; 44 000 hp total output; 2 shafts
Speed, knots: 32·5 gas; 16·5 diesel
Complement: 115

Danish design. In addition to other armament they were originally designed for three 21-in torpedo tubes and the Terne anti-submarine weapon. But the latter has been dropped in favour of Sea Sparrow and two twin 21-in mountings fitted on the beams.

Conversion: Mid-life conversion in 1977-78. *Peder Skram*; 1976-77, *Herluf Trolle*.

PEDER SKRAM *9/1980, L. and L. van Ginderen*

Radar: Combined warning: Two CWS 3.
Fire control: Three CGS 1.
Tactical: One NWS 1.
Navigation: One NWS 2.

Sonar: PMS 26.

1 + 2 "NIELS JUEL" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
NIELS JUEL	F 354	Aalborg Vaerft	20 Oct 1976	27 Sep 1978	26 Aug 1980
OLFERT FISCHER	F 355	Aalborg Vaerft	1977	—	?Sep 1981
PETER TORDENSKJOLD	F 356	Aalborg Vaerft	1977	—	?Sep 1982

Displacement, tons: 1 320 full load
Dimensions, feet (metres): 275·5 × 33·8 × 13·1 *(84 × 10·3 × 4)*
Missiles: SSM: 8—Harpoon (two 4-cell launchers); SAM: 8—Sea Sparrow (8-cell launcher)
Gun: 1—76 mm/62 OTO Melara (Compact)
A/S weapons: 4—Mk 32 torpedo tubes (built into hull)
Mines: Have laying capability
Rocket Projectors: 2 for illumination, Chaff and Sea Gnat HE rockets
Main engines: CODOG General-Electric LM 2 500 gas turbine; 18 400 shp; 1 MTU 20 V 956 TB82 diesel; max 4 500 hp; SSS clutches; GEC gearbox; 2 shafts
Speed, knots: 30; 20 on diesel
Range, miles: 2 500 at 18 knots
Complement: 90

First of a class which is planned eventually to reach a total of six. Designed to replace "Triton" class and, possibly, "Peder Skram" class.
Y-ARD Glasgow designed the class to Danish order. On 5 December 1975 announced that first three would be built by Aalborg Vaerft. Delivery date for *Niels Juel*—January 1979; *Olfert Fischer*—1 March 1980; *Peter Tordenskjold*—March 1981 for weapons fit and trials.

Fire control: Philips 9LV 200 Mk 2 Combat Information and control for guns and SSMs.

NIELS JUEL *1979, Royal Danish Navy*

Missiles: Will be fitted with General Dynamics RAM-ASMD close-in SAM when development is complete.

Radar: Plessey AWS 5, Skanter 16-in Mk 009, one GR 600, two RTN 10 and one Philips surface surveillance.

Sonar: Plessey PMS 26.

1 "MODIFIED HVIDBJØRNEN" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BESKYTTEREN	F 340	Aalborg Vaerft	15 Dec 1974	27 May 1975	27 Feb 1976

Displacement, tons: 1 970 full load
Dimensions, feet (metres): 244 × 39·4 × 15·4 *(74·8 × 12 × 5)*
Aircraft: 1 Lynx helicopter
Gun: 1—3 in *(76 mm)*
Main engines: 3 Burmeister and Wain Alpha diesels; 7 440 bhp; 1 shaft
Speed, knots: 18
Range, miles: 4 500 at 16 knots on 2 engines; 6 000 at 13 knots on 1 engine
Complement: 59

Cost approximately £5 million. Strengthened for navigation in ice. Designed for similar duties as *Hvidbjørnen*.

Radar: Search: One AWS 1/CWS 2.
Tactical: One NWS 1.
Navigation: One NWS 2.

Sonar: PMS 26.

BESKYTTEREN *7/1977, Leo van Ginderen*

4 "HVIDBJØRNEN" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HVIDBJØRNEN	F 348	Aarhus Flydedok	4 June 1961	23 Nov 1961	15 Dec 1962
VAEDDEREN	F 349	Aalborg Vaerft	30 Oct 1961	6 Apr 1962	19 Mar 1963
INGOLF	F 350	Svendborg Vaerft	5 Dec 1961	27 July 1962	27 July 1963
FYLLA	F 351	Aalborg Vaerft	27 June 1962	18 Dec 1962	10 July 1963

Displacement, tons: 1 345 standard; 1 650 full load
Dimensions, feet (metres): 238·2 × 38 × 16 *(72·6 × 11·6 × 4·9)*
Aircraft: 1 Alouette III helicopter
Gun: 1—3 in *(76 mm)*
A/S weapons: DCs
Main engines: 4 General Motors 16—567C diesels; 6 400 bhp; 1 shaft
Speed, knots: 18
Range, miles: 6 000 at 13 knots
Complement: 73

Ordered in 1960-61. Of frigate type for fishery protection and surveying duties in the North Sea, Faroe Islands and Greenland waters. They are equipped with a helicopter platform aft and hangar.

Radar: Search: One AWS 1/CWS 2.
Tactical: One NWS 1.

Sonar: PMS 26.

Surveying: *Hvidbjørnen* can act as a survey ship with a complement of ten officers and 75 ratings.

HVIDBJØRNEN *1978, Royal Danish Navy*

CORVETTES

2 "TRITON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BELLONA	F 344	Naval Meccanica, Castellammare	1954	9 Jan 1955	31 Jan 1957
TRITON	F 347	Cantiere Navali di Taranto	1953	12 Sep 1954	10 Aug 1955

Displacement, tons: 800 standard; 950 full load
Dimensions, feet (metres): 250·3 × 31·5 × 9·2 *(76·3 × 9·6 × 2·8)*
Guns: 2—3 in *(76 mm)*; 1—40 mm
A/S: 2 Hedgehogs; 4 DCTs
Main engines: 2 Ansaldo Fiat 409T diesels, 4 800 bhp; 2 shafts
Speed, knots: 19
Range, miles: 3 000 at 18 knots
Complement: 99

These were built in Italy for the Danish Navy under the US "offshore" account. Sisters of the Italian "Albatros" class. Originally class of four. Both in reserve and shortly to be deleted.

Classification: Officially classified as corvettes in 1954, but have "F" pennant numbers.

Radar: Search: Plessey AWS 1.
Navigation: E Band.

Sonar: QCU-2.

TRITON *2/1978 J. L. M. van der Burg*

LIGHT FORCES

10 "WILLEMOES" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
BILLE	P 540	Frederikshavn V and F	Oct 1976
BREDAL	P 541	Frederikshavn V and F	21 Jan 1977
HAMMER	P 542	Frederikshavn V and F	1 Apr 1977
HUITFELD	P 543	Frederikshavn V and F	15 June 1977
KRIEGER	P 544	Frederikshavn V and F	22 Sep 1977
NORBY	P 545	Frederikshavn V and F	22 Nov 1977
RODSTEEN	P 546	Frederikshavn V and F	16 Feb 1978
SEHESTED	P 547	Frederikshavn V and F	Mar 1978
SUENSON	P 548	Frederikshavn V and F	June 1978
WILLEMOES	P 549	Frederikshavn V and F	June 1976 (trials)

Displacement, tons: 260 full load
Dimensions, feet (metres): 151 × 24 × 8 *(46 × 7·4 × 2·4)*
Missiles: SSM; 8—Harpoon (in place of after torpedo tubes) (see *Armament* note)
Gun: 1—76 mm/62 (Compact)
Torpedo tubes: 2 or 4—21 in (see notes)
Main engines: CODOG; 3 Rolls-Royce Proteus gas turbines; 12 750 bhp; 2 General Motors V 71 diesels for cruising on wing shafts; 1 600 bhp; cp propellers.
Speed, knots: 38 (12 on diesels).
Complement: 25 (6 officers, 19 ratings).

Designed by Lürssen to Danish order. Very similar to Swedish "Spica II" class (also Lürssen). Original order to Frederikshavn for four boats, increased to eight and finally ten.
Building dates: *Willemoes* (prototype) laid down in July 1974, launched in October 1974 and completed for trials (with four torpedo tubes and no missiles) in October 1975. Series production began with *Bille* in 1974. She was launched in March 1976. Further boats laid down in October 1974, in December 1974 and in February 1975. *Suenson* (last boat) launched in February 1978.

Cost: 50 million Danish kronen (equipped).

Armament: From the 6th boat all are fitted with two torpedo tubes and Harpoon. The rest are to be similarly retrofitted. It is possible that there may be variations in the armament—eight Harpoon and no torpedo tubes or four Harpoon and two torpedo tubes or no Harpoon and four torpedo tubes. Present fitting situation—*Bredal* and *Krieger*; four tubes, no Harpoon—*Bille, Norby* and *Sehested*; two tubes, four Harpoon.

BILLE (with Harpoon) *1979, Royal Danish Navy*

Fire control: Philips 9LV200.

Radar: Warning combined: One.
Fire control: One.
Navigation: One NWS 3.

6 "SØLØVEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
SØLØVEN	P 510	Vosper	12 Feb 1965
SØRIDDEREN	P 511	Vosper	10 Feb 1965
SØBJØRNEN	P 512	R. Dockyard, Copenhagen	Sep 1965
SØHESTEN	P 513	R. Dockyard, Copenhagen	June 1966
SØHUNDEN	P 514	R. Dockyard, Copenhagen	Dec 1966
SØULVEN	P 515	R. Dockyard, Copenhagen	Mar 1967

Displacement, tons: 95 standard; 120 full load
Dimensions, feet (metres): 99 × 26·2 × 8·2 *(30·3 × 8 × 2·5)*
Guns: 2—40 mm Bofors
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 3 Bristol Siddeley Proteus gas turbines; 3 shafts; 12 750 bhp = 54 knots
2 General Motors diesels on wing shafts for cruising; 300 bhp = 10 knots
Range, miles: 400 at 46 knots
Complement: 24

The design is a combination of the Vosper "Brave" class hull form and "Ferocity" type construction. *Søløven* and *Søridderen* were both completed in June 1964 and handed over to the RDN after six months' trials.

Radar: One NWS 1.

SØULVEN *1978, Royal Danish Navy*

3 + 2 "AGDLEQ" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
AGDLEQ	Y 386	Svendborg Vaerft	12 Mar 1974
AGPA	Y 387	Svendborg Vaerft	14 May 1974
TULUGAQ	Y 388	Svendborg Vaerft	26 June 1979
—	Y 389	—	—
—	Y 390	—	—

Displacement, tons: 300; 330 (388 and 389)
Dimensions, feet (metres): 101·7 × 26·2 × 11·5 *(31 × 8 × 3·5)*
Guns: 2—20 mm
Speed, knots: 12
Complement: 14

Designed for service off Greenland. A slightly larger ship, *Tulugaq*, of 330 tons ordered from same builders in 1977 to replace *Tijsten*. Main engine—one Burmeister and Wain Alpha diesel for 14 knots (800 bhp). Cost 11·4 million Danish kronen.
Y 389 and 390 to replace "Maagen" class.

Radar: Navigation: Two NWS 3.

TULUGAQ *1979, Royal Danish Navy*

8 "DAPHNE" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
DAPHNE	P 530	R. Dockyard, Copenhagen	19 Dec 1961
DRYADEN	P 531	R. Dockyard, Copenhagen	4 Apr 1962
HAVFRUEN	P 533	R. Dockyard, Copenhagen	20 Dec 1962
NAJADEN	P 534	R. Dockyard, Copenhagen	26 Apr 1963
NYMFEN	P 535	R. Dockyard, Copenhagen	4 Oct 1963
NEPTUN	P 536	R. Dockyard, Copenhagen	18 Dec 1963
RAN	P 537	R. Dockyard, Copenhagen	15 May 1964
ROTA	P 538	R. Dockyard, Copenhagen	20 Jan 1965

Displacement, tons: 170
Dimensions, feet (metres): 121·3 × 20 × 6·6 *(37 × 6·8 × 2)* (P 530-533)
Gun: 1—40 mm plus 2—51 mm flare launchers
A/S weapons: DCs
Main engines: Two 12-cyl Maybach diesels; 2 shafts; 2 600 bhp = 20 knots
(plus 1 cruising 6-cyl Foden diesel; 100 bhp)
Complement: 23

Four were built under US offshore programme. Some have been disarmed.

Design: P 530-533 have a rounded stern and P 534-538 have a straight stern.

Radar: One NWS 3.

Sonar: PMS 26.

DAPHNE *1978, Royal Danish Navy*

2 "MAAGEN" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MAAGEN	Y 384	Helsingør Dockyard	May 1960
MALLEMUKKEN	Y 385	Helsingør Dockyard	May 1960

Displacement, tons: 190
Dimensions, feet (metres): 88·5 × 22·9 × 9·5 *(27 × 7 × 2·9)*
Guns: 2—20 mm
Main engine: 385 hp; 1 shaft = 10 knots
Complement: 14

Of steel construction. Laid down on 15 January 1960.

Radar: Two NWS 3.

MAAGEN *1976, Royal Danish Navy*

9 "BARSØ" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BARSØ	Y 300	Svendborg Vaerft	1969
DREJØ	Y 301	Svendborg Vaerft	1969
ROMSØ	Y 302	Svendborg Vaerft	1969
SAMSØ	Y 303	Svendborg Vaerft	1969
THURØ	Y 304	Svendborg Vaerft	1969
VEJRØ	Y 305	Svendborg Vaerft	1969
FARØ	Y 306	Svendborg Vaerft	1972
LAESØ	Y 307	Svendborg Vaerft	1973
ROMØ	Y 308	Svendborg Vaerft	1973

Displacement, tons: 155
Dimensions, feet (metres): 82 × 19·7 × 9·2 *(25 × 6 × 2·8)*
Guns: 2—20 mm
Speed: 11 knots
Complement: 12

Rated as patrol cutters.

Radar: One NWS 3.

BARSØ *1978, Royal Danish Navy*

2 LARGE BOTVED TYPE (COASTAL PATROL CRAFT)

Y 375 **Y 376**

Displacement, tons: 12
Dimensions, feet (metres): 42·9 × 14·8 × 3·7 *(13·1 × 4·5 × 1·1)*
Main engines: Diesel; 2 shafts; 680 hp = 26 knots

Built in 1974 by Botved Boats.

Radar: One NWS 3.

Y 376 *1978, Royal Danish Navy*

3 SMALL BOTVED TYPE (COASTAL PATROL CRAFT)

Y 377 **Y 378** **Y 379**

Displacement, tons: 9
Dimensions, feet (metres): 32·1 × 10·4 × 3·1 *(9·8 × 3·3 × 0·9)*
Main engines: Diesels; 2 shafts; 500 hp = 27 knots

Built in 1975 by Botved Boats.

Radar: One NWS 3.

Small BOTVED Type *1975, Royal Danish Navy*

3 Y TYPE (COASTAL PATROL CRAFT)

Y 338 **Y 339** **Y 343**

Miscellaneous patrol cutters (ex-fishing vessels) all built in 1944-45.

6 "MHV 90" CLASS (COASTAL PATROL CRAFT)

MHV 90 **MHV 91** **MHV 92** **MHV 93** **MHV 94** **MHV 95**

Displacement, tons: 90
Dimensions, feet (metres): 64·9 × 18·7 × 8·2 *(19·8 × 5·7 × 2·5)*
Gun: 1—20 mm
Main engine: Diesel; 1 shaft = 10 knots

Built in 1975. Manned by Naval Home Guard.

Radar: One NWS 3.

MHV 93 *1975, Royal Danish Navy*

6 "MHV 80" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
ASKØ (ex-Y 386, ex-M 560, ex-MS 2)	MHV 81	Denmark	1941
ENØ (ex-Y 388, ex-M 562, ex-MS 5)	MHV 82	Denmark	1941
MANØ (ex-Y 391, ex-M 566, ex-MS 9)	MHV 83	Denmark	1941
BAAGØ (ex-Y 387, ex-M 561, ex-MS 3)	MHV 84	Denmark	1941
HJORTØ (ex-Y 389, ex-M 564, ex- MS 7)	MHV 85	Denmark	1941
LYØ (ex-Y 390, ex-M 565, ex-MS 8)	MHV 86	Denmark	1941

Displacement, tons: 74
Dimensions, feet (metres): 78·8 × 21 × 5 *(24 × 6·4 × 1·5)*
Gun: 1—20 mm
Main engine: Diesel; 1 shaft; 350 bhp = 11 knots

Of wooden construction. All launched in 1941. Former inshore minesweepers. Manned by the Naval Home Guard.

Radar: One NWS 3.

HJORTØ *1978, Royal Danish Navy*

3 "MHV 70" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MHV 70	—	R. Dockyard, Copenhagen	1958
MHV 71	—	R. Dockyard, Copenhagen	1958
MHV 72	—	R. Dockyard, Copenhagen	1958

Displacement, tons: 76
Dimensions, feet (metres): 65·9 × 16·7 × 8·2 *(20·1 × 5·1 × 2·5)*
Gun: 1—20 mm
Main engine: 200 bhp = 10 knots

Patrol boats and training craft for the Naval Home Guard. Formerly designated DMH, but allocated MHV numbers in 1969.

Radar: One NWS 3.

MHV 70 *5/1979, Leo van Ginderen*

5 "MHV 20" CLASS (COASTAL PATROL CRAFT)

MHV 20-24

Dimensions, feet (metres): 54·1 × 13·8 × 6·6 *(16·5 × 4·2 × 2)*
Gun: 1 MG
Main engines: 2 Mercedes diesels; 2 shafts; 500 bhp = 15 knots
Complement: 9

Built by Eyvinds Plastik Både Vaerft, Svendborg of GRP. For use of Naval Home Guard for patrols in The Sound. Cost approximately 2 million kronen.

Note: In addition there is a number of small vessels of the trawler and other types used by the Naval Home Guard—MHVs 1, 51, 54, 55, 57, 60, 61, 62, 63, 65, 67, 68, 74, 75, 80 and some other fishing craft types.

MHV 21 *1979, Royal Danish Navy*

MINE WARFARE FORCES

4 "FALSTER" CLASS (MINELAYERS)

Name	*No.*	*Builders*	*Commissioned*
FALSTER	N 80	Nakskov Skibsvaerft	7 Nov 1963
FYEN	N 81	Frederikshavn Vaerft	18 Sep 1963
MØEN	N 82	Frederikshavn Vaerft	29 Apr 1964
SJAELLAND	N 83	Nakskov Skibsvaerft	7 July 1964

Displacement, tons: 1 900 full load
Dimensions, feet (metres): 252·6 × 42·6 × 13·1 *(77 × 13 × 4)*
Missiles: SAM; Sea Sparrow
Guns: 4—3 in *(76 mm)*, (twin US Mk 35)
Mines: 400
Main engines: 2 General Motors—567D 3 diesels; 4 800 shp; 2 shafts
Speed, knots: 17
Complement: 119

Ordered in 1960-61 and launched 1962-63. All are named after Danish islands. The steel hull is flush-decked with a raking stem, a full stern and a prominent knuckle forward. The hull has been specially strengthened for ice navigation. Similar to Turkish *Nusret*. *Møen* employed on midshipmen's training.

Conversion: *Sjaelland* converted in 1976 to act as depôt ship for submarines and FAC in place of *Henrik Gerner*.

Fire control: Contraves.

Gunnery: All mountings now fitted with shields.

Radar: Warning combined: One CWS 2.
Fire control: One CGS 1.
Tactical: One NWS 1.
Navigation: One NWS 2.

MØEN *11/1980, L. and L. van Ginderen*

2 "LINDORMEN" CLASS (MINELAYERS)

Name	*No.*	*Builders*	*Commissioned*
LINDORMEN	N 43	Svendborg Vaerft	26 Oct 1977
LOSSEN	N 44	Svendborg Vaerft	30 Jan 1978

Displacement, tons: 570
Dimensions, feet (metres): 134·5 × 29·5 × 8 *(41 × 9 × 2·6)*
Guns: 2—20 mm
Mines: 50-60 (Depending on type)
Main engines: 2 Frichs diesels; 1 600 hp = 14 knots
Complement: 27

Controlled Minelayers. *Lindormen* laid down on 20 January 1977, launched on 9 September 1977 and *Lossen* laid down on 22 June 1977, launched on 11 November 1977.

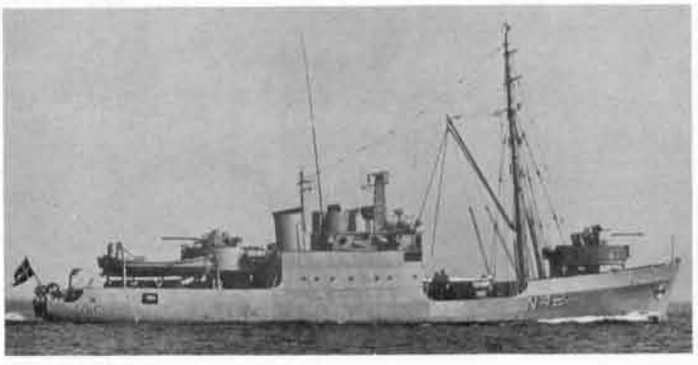
LINDORMEN *1978, Royal Danish Navy*

1 "LANGELAND" CLASS (MINELAYER)

Name	*No.*	*Builders*	*Commissioned*
LANGELAND	N 42	Royal Dockyard, Copenhagen	1951

Displacement, tons: 310 standard; 332 full load
Dimensions, feet (metres): 144·3 × 23·7 × 7·2 *(44 × 7·2 × 2·1)*
Guns: 2—40 mm; 2—20 mm Madsen
Main engines: 2 Burmeister and Wain diesels; 2 shafts; 1 000 bhp = 12 knots
Complement: 34

Laid down in 1950. Launched on 17 May 1950. Controlled minelayer.



LANGELAND *1978, Royal Danish Navy*

8 Ex-US "ADJUTANT" CLASS (Ex-AMS) (MINESWEEPERS—COASTAL)

AARØSUND (ex-*MSC* 127) M 571
ALSSUND (ex-*MSC* 128) M 572
EGERNSUND (ex-*MSC* 129) M 573
GRØNSUND (ex-*MSC* 256) M 574
GULDBORGSUND (ex-*MSC* 257) M 575
OMØSUND (ex-*MSC* 221) M 576
ULVSUND (ex-*MSC* 263) M 577
VILSUND (ex-*MSC* 264) M 578

Displacement, tons: 350 standard; 375 full load
Dimensions, feet (metres): 144 × 27·9 × 8 *(43·9 × 8·5 × 2·4)*
Gun: 1—40 mm
Main engines: Diesels; 2 shafts; 1 200 bhp = 13 knots
Range, miles: 3 000 at 10 knots
Complement: 35

"MSC (ex-AMS) 60" class NATO coastal minesweepers all built in USA. Completed in 1954-56. *Aarøsund* was transferred on 24 January 1955, *Alssund* on 5 April 1955, *Egernsund* on 3 August 1955, *Grønsund* on 21 September 1956, *Guldborgsund* on 11 November 1956, *Omøsund* on 20 June 1956, *Ulvsund* on 20 September 1956 and *Vilsund* on 15 November 1956. *Guldborgsund* has been fitted with a charthouse between bridge and funnel and is employed on surveying duties.

Radar: One NWS 3.

ULVSUND *7/1980, Leo van Ginderen*

SLEIPNER A 558

A 200-ton torpedo recovery/transporter.

SERVICE FORCES

Note: There is a road-borne support unit (MOBA) for the Fast Attack Craft with two sections. The first, of eight vehicles with radar, W/T and control offices is MOBA (Ops) and the second, of 25 vehicles for stores, fuel, provisions, torpedoes and workshops in MOBA (Log).

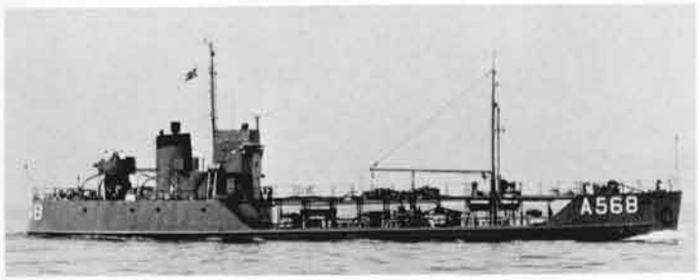
TANKERS

2 Ex-US "YO 65"CLASS

Name	*No.*	*Builders*	*Commissioned*
RIMFAXE (ex-US *YO 226*)	A 568	Jefferson Bridge & Machine Co, USA	2 Nov 1945
SKINFAXE (ex-US *YO 229*)	A 569	Jefferson Bridge & Machine Co, USA	7 Dec 1945

Displacement, tons: 1 400 full load
Dimensions, feet (metres): 174 × 32·9 × 13·3 *(53·1 × 10 × 4·1)*
Gun: 1—20 mm
Main engine: 1 General Motors diesel; 560 bhp = 10 knots
Complement: 23

Transferred to the RDN from the USA on 2 August 1962.



RIMFAXE *1979, Royal Danish Navy*

ROYAL YACHT

Name	*No.*	*Builders*	*Commissioned*
DANNEBROG	A 540	R. Dockyard, Copenhagen	1932

Displacement, tons: 1 130
Dimensions, feet (metres): 246 × 34 × 11·2 *(75 × 10·4 × 3·4)*
Guns: 2—37 mm (saluting)
Main engines: 2 sets Burmeister and Wain 8-cyl 2 cycle diesels; 1 800 bhp = 14 knots
Complement: 57

Launched on 10 October 1931.

DANNEBROG *1978, Leo van Ginderen*

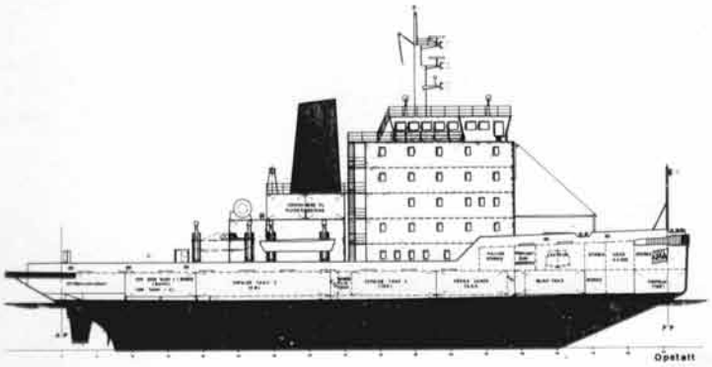
ICEBREAKERS

Note: Icebreakers are controlled by the Ministry of Trade and Shipping and civilian manned but are maintained by RDN at Frederikshavn in summer.

Name	*No*	*Builders*	*Commissioned*
—	—	Svendborg Vaerft	—

Displacement, tons: 2 250
Dimensions, feet (metres): 221·4 × 50·2 × 15·4 *(67·5 × 15·3 × 4·7)*
Main engines: Alpha diesel; 6 800 hp; = 16·5 knots

No bow thruster. Side rolling tanks. To be fitted for surveying duties in non-ice periods. Cost 65 million Danish kronen.



NEW ICEBREAKER *1978*

Name	*No.*	*Builders*	*Commissioned*
DANBJØRN	—	Lindø Vaerft, Odense	1965
ISBJØRN	—	Lindø Vaerft, Odense	1966

Displacement, tons: 3 685
Dimensions, feet (metres): 252 × 56 × 20 *(76·8 × 17·1 × 6·1)*
Main engines: Diesel-electric; 10 500 shp = 14 knots
Complement: 34

DANBJØRN *1979, Leo van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
ELBJØRN	—	Frederikshavn Vaerft	1966

Displacement, tons: 893 standard; 1 400 full load
Dimensions, feet (metres): 156·5 × 40·3 × 14·5 *(47 × 12·1 × 4·4)*
Main engines: Diesel-electric; 3 600 bhp = 12 knots

Used by RDN for surveying in summer.

FISHERY PROTECTION

(Operated by Ministry of Fisheries)

1 "OSPREY" TYPE FV 710

Name	*No.*	*Builders*	*Commissioned*
HAVØRNEN	—	Frederikshavn Vaerft	July 1979

Displacement, tons: 505 full load
Dimensions, feet (metres): 164 × 34·5 × 9 *(50 × 10·5 × 2·8)*
Main engines: 2 Burmeister and Wain Alpha 16V23L diesels; 4 640 hp = 20 knots
Complement: 15; accommodation for 35

Built to Det Norske Veritas classification. A helicopter flight deck can handle a Westland Lynx. There is space allowed for a hangar. The Pacific 22 inflatable craft is launched from a slipway in the stern. Civilian manned.

Radar: Furuno Type FRM-64.

Sales: One completed for Burma in 1980, two more on order.

HAVØRNEN *1979, Ministry of Fisheries*

4 RESCUE VESSELS

Three for the North Sea, one for the Baltic.

SURVEY VESSELS

(See *Hvidbjørnen*)

(Operated by Administration of Navigation and Hydrography)

SUND

Of 376 tons; launched 1954, completed 1956; complement 35.

6 LAUNCHES

SKA 3 4 5 6 7 8

Of 27 tons standard; built 1958-68; complement 6. SKA 7 and 8 are stationed in Denmark, the remainder in Greenland.

SKA 7 *1978*

ENVIRONMENT CRAFT

(Operated by Ministry of the Environment)

2 + 1 POLLUTION CONTROL CRAFT

MILSØ 101 and **102**

Displacement, tons: 18·3
Dimensions, feet (metres): 53·8 × 14·4 × 7·1 *(16·4 × 4·4 × 2·2)*
Main engine: 1 MWM diesel; 454 hp = 15 knots
Range, miles: 350 at 8 knots
Complement: 4

Built by Ejvinds Plastikbodevarft-Svendborg. Carry derricks and booms for framing oil slicks and dispersant fluids. Naval manned. Third under construction.

MILSØ 102 *1978*

DJIBOUTI

(see Jibuti)

DOMINICAN REPUBLIC

Ministerial

Minister of the Armed Forces:
General Rafael A. Valdez Hilario

Headquarters' Appointments

Chief of Naval Staff:
Vice-Admiral Francisco A. Amiama Castillo
Vice-Chief of Naval Staff:
Rear Admiral Julio Cesar Ortiz Pena

Personnel

(a) 1981: 4 050 officers and men
(b) Selective military service

Maritime Air
(All operated by Dominican Air Force)

3 Alouette II/III helicopters
2 H-19 Chickasaws
7 OH-6A Cayuse
2 Hiller 12-E Ravens

Naval Bases

"27 de Febrero", Santo Domingo. HQ of CNS, Naval School, Supply Base.
"Las Calderas": Las Calderas, Bani. Naval dockyard, 700 ton synchrolift. Training centre. Supply Base.
Haina. Dockyard facility. Supply Base.

Strength of the Fleet

Type	*Active (Reserve)*
Frigate	1
Corvettes	5
Large Patrol Craft	2 (3)
Coastal Patrol Craft	8
LSM	1
LCUs	2
Survey Vessels	4
Tankers (Small)	2
Tugs (Large)	5
Tugs (Harbour)	5
Training Ship and Craft	4

Mercantile Marine

Lloyd's Register of Shipping:
31 vessels of 37 659 tons gross

DELETIONS

Frigates

1979 *Gregorio Luperon, Capitan General Pedro Santana*

Corvettes

1978 *Cristobal Colon, Juan Alejandro Acosta*

Light Forces

1975 *Maymyon, Puerto Hemosa*
1977 *Albacora, Bonito*
1978 *Rigel*

Amphibious Craft

1975 *Enriquillo*

Tugs

1975 *Consuelo, Haina, Santana*
1979 *Maguana*

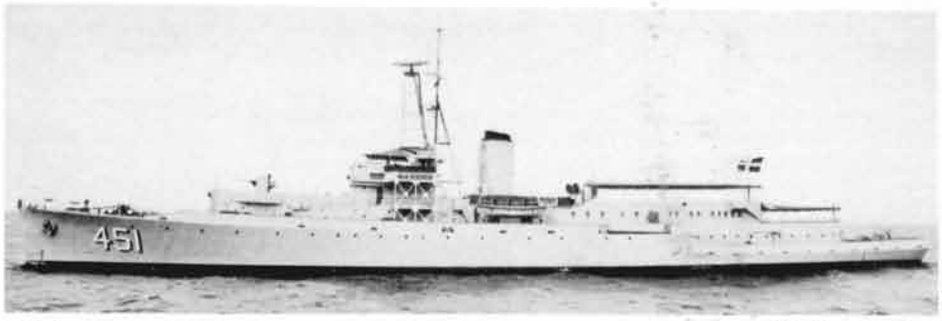
FRIGATE

1 Ex-CANADIAN "RIVER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MELLA (ex-*Presidente Trujillo*, ex-HMCS *Carlplace*)	F 451	Davies S.B. & Repairing Co, Lauzon, Canada	—	6 July 1944	1944

Displacement, tons: 1 400 standard; 2 125 full load
Dimensions, feet (metres): 301·5 × 36·7 × 12 *(91·9 × 11·2 × 3·7)*
Guns: 1—100 mm/45 (single Mk 23); 1—40 mm/60; 4—20 mm/70 (single) (see note)
Main engines: Triple expansion; 2 shafts; 5 500 ihp
Boilers: 2 of 3-drum type
Speed, knots: 20
Oil fuel, tons: 645
Range, miles: 4 200 at 12 knots
Complement: 195 (15 officers, 130 ratings, 50 midshipmen)

Transferred to the Dominican Navy in 1946. Modified for use as Presidential yacht with extra accommodation and deck-houses built up aft in place of some armament. Pennant number as a frigate was F 101, but as the Presidential yacht it was no longer worn. Now carries pennant number 451 as flagship of Dominican naval forces. Used by the staff in naval operations. Renamed *Mella* in 1962.



MELLA *1972, Dominican Navy*

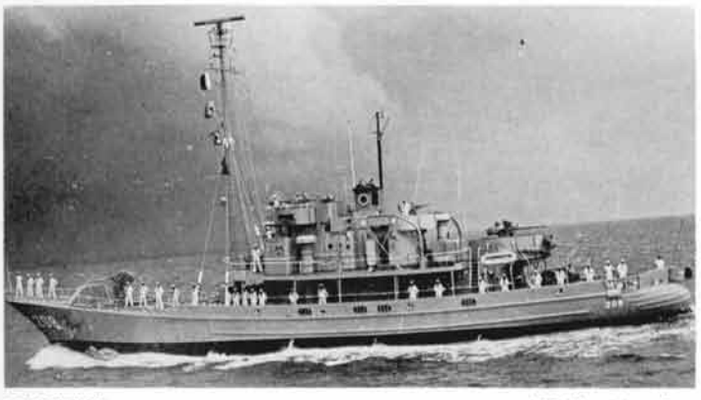
CORVETTES

3 Ex-US "COHOES" CLASS

Name	*No.*	*Builders*	*Commissioned*
CAMBIASO (ex-USS *Etlah*, AN 79)	P 207	Marietta Manufacturing Co	16 Apr 1945
SEPARACION (ex-USS *Passaconaway*, AN 86)	P 208	Marine S.B. Co	27 Apr 1945
CALDERAS (ex-USS *Passaic*, AN 87)	P 209	Leatham D Smith S.B. Co	6 Mar 1945

Displacement, tons: 650 standard; 855 full load
Dimensions, feet (metres): 162·3 × 33·8 × 11·7 *(49·5 × 10·3 × 3·6)*
Guns: 1—3 in *(76 mm)*; 3—20 in
Main engines: Busch Sulzer diesel-electric; 1 200 shp = 12 knots
Complement: 48

Ex-netlayers in reserve in USA since 1963. Transferred by sale on 29 September 1976. Now used for patrol duties.



SEPARACION *1980, Dominican Navy*

2 Ex-US "ADMIRABLE" CLASS

Name	*No.*	*Builders*	*Commissioned*
PRESTOL BOTELLO (ex-*Separacion*, ex-USS *Skirmish*, MSF 303)	BM 454	Associated S.B.	16 Aug 1943
TORTUGUERO (ex-USS *Signet*, MSF 302)	BM 455	Associated S.B.	16 Aug 1943

Displacement, tons: 650 standard; 900 full load
Dimensions, feet (metres): 184·5 × 33 × 9 *(56·3 × 9·9 × 2·7)*
Guns: 1—3 in; 2—40 mm; 6—20 mm
A/S weapons: 1 Hedgehog
Main engines: 2 diesels; 2 shafts; 1 710 bhp = 14 knots
Range, miles: 5 600 at 9 knots
Complement: 90 (8 officers, 82 men)

Former US fleet minesweepers. Purchased on 13 January 1965. *Prestol Botello* renamed early 1976. Sweep-gear removed. Classified as Cañoneros.

PRESTOL BOTELLO *7/1976, Norman Friedman*

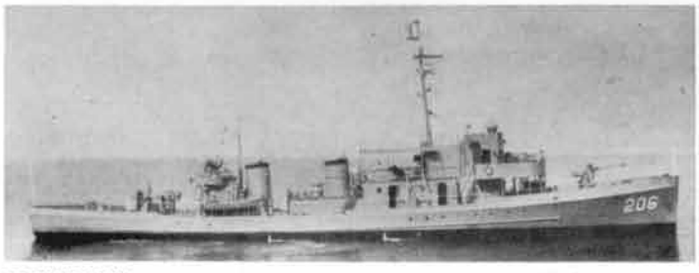
LIGHT FORCES

3 Ex-USCG "ARGO" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
INDEPENDENCIA (ex-USCGC *Icarus*)	P 204 (ex-P 105)	Bath Ironworks	1932
LIBERTAD (ex-*Rafael Atoa*, ex-USCGC *Thetis*)	P 205 (ex-P 106)	—	—
RESTAURACION (ex-USCGC *Galathea*)	P 206 (ex-P 104)	John H. Machis & Co. Camden, NJ	1933

Displacement, tons: 337 standard
Dimensions, feet (metres): 165 × 25·2 × 9·5 *(50·3 × 7·7 × 2·9)*
Guns: 1—3 in *(76 mm)*; 1—40 mm; 1—20 mm
Main engines: 2 diesels; 1 280 bhp = 15 knots
Range, miles: 1 300 at 15 knots
Complement: 49 (5 officers, 44 men)

Ex-US Coast Guard Cutters. Rebuilt in 1975. In reserve.



RESTAURACION *1977, Dominican Navy*

1 US "PGM 71" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BETELGEUSE (ex-US *PGM 77*)	GC 102	Peterson, USA	1966

Displacement, tons: 130 standard; 145 full load
Dimensions, feet (metres): 101·5 × 21 × 5 *(30·9 × 6·4 × 1·5)*
Guns: 1—40 mm; 4—20 mm (singles); 2—5 in/50 MGs
Main engines: 8 General Motors 6-71 diesels; 2 shafts; 2 200 bhp = 21 knots
Range, miles: 1 500 at 10 knots
Complement: 20

Built in the USA and transferred to the Dominican Republic under the Military Aid Programme on 14 January 1966.

BETELGEUSE *1972, Dominican Navy*

1 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
CAPITAN ALSINA (ex-*RL 101*)	GC 105	—	1944

Displacement, tons: 100 standard
Dimensions, feet (metres): 104·8 × 19·2 × 5·8 *(32 × 5·9 × 1·8)*
Guns: 2—20 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 000 hp = 17 knots
Complement: 20

Of wooden construction. Launched in 1944. Named as above in 1957. Rebuilt 1977.

CAPITAN ALSINA

4 "BELLATRIX" CLASS (COASTAL PATROL CRAFT)

Name	No.	Builders	Commissioned
PROCION	GC 103	Sewart Seacraft Inc, Berwick, La.	1967
ALDEBARÁN	GC 104	Sewart Seacraft Inc, Berwick, La.	1972
BELLATRIX	GC 106	Sewart Seacraft Inc, Berwick, La.	1967
CAPELLA	GC 108	Sewart Seacraft Inc, Berwick, La.	1968

Displacement, tons: 60
Dimensions, feet (metres): 85 × 18 × 5 *(25·9 × 5·5 × 1·5)*
Guns: 3—5 MGs
Main engines: 2 General Motors diesels; 500 bhp = 18·7 knots
Complement: 12

Transferred to the Dominican Navy by USA, *Bellatrix* on 18 August 1967 and *Procion* on 1 May 1967, *Capella* on 15 October 1968 and *Aldebaran* in May 1972.

BELLATRIX *1970, Dominican Navy*

4 COASTAL PATROL CRAFT

Name	No.	Builders	Commissioned
CARITE	BA 3	Ast. Navales Dominicanos	1975
ATÚN	BA 6	Ast. Navales Dominicanos	1975
PICUA	BA 9	Ast. Navales Dominicanas	1975
JUREL	BA 15	Ast. Navales Dominicanos	1975

Displacement, tons: 24
Dimensions, feet (metres): 45 × 13 × 6·6 *(13·7 × 4 × 1·9)*
Gun: 1—MG
Main engine: 1 General Motors diesel; 101 hp = 9 knots
Complement: 4

Auxiliary sailing craft with a sail area of 750 sq ft and a cargo capacity of 7 tons. Used for SEAL training.

AMPHIBIOUS FORCES

1 Ex-US "LSM I" CLASS

Name	No.	Builders	Commissioned
SIRIO (ex-US *LSM 483*)	BDM 301 (ex-*BA 104*)	Brown S.B. Co, Houston	13 Apr 1945

Displacement, tons: 734 standard; 1 100 full load
Dimensions, feet (metres): 203·5 × 34 × 10 *(61·9 × 10·4 × 3·1)*
Main engines: 2 General Motors diesels; 2 shafts; 1 800 bhp = 14 knots
Oil fuel, tons: 164
Complement: 30

Laid down on 17 February and launched on 10 March 1945. Transferred to the Dominican Navy in March 1958. Refitted in Dominican Republic in 1970.

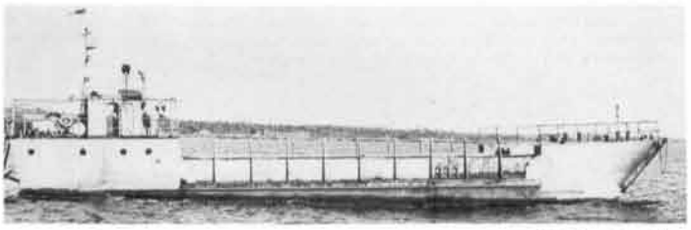
SIRIO *1968, Dominican Navy*

1 LCU

Name	No.	Builders	Commissioned
SAMANA (ex-*LA 2*)	LDM 302	Ast. Navales Dominicanos	1958

Displacement, tons: 150 standard; 310 full load
Dimensions, feet (metres): 119·5 × 36 × 3 *(36·4 × 11 × 0·9)*
Gun: 1—5 cal MG
Main engines: 3 General Motors diesels; 441 bhp = 8 knots
Oil fuel, tons: 80
Complement: 17

Similar characteristics to US LCT 5 type although slightly larger.



SAMANA *1972, Dominican Navy*

1 LCU

Name	No.	Builders	Commissioned
OCOA	LDP 303	Ast. Navales Dominicanos	1976

Displacement, tons: 36·8
Dimensions, feet (metres): 56·2 × 14 × 3·9 *(17·1 × 4·3 × 1·2)*
Main engines: 2—6-cyl diesels; 225 bhp = 6 knots
Complement: 5

Capacity about 30 tons.

OCOA *1979, Dominican Navy*

SURVEY VESSELS

1 Ex-US "SOTOYOMO" CLASS

Name	No.	Builders	Commissioned
ENRIQUILLO (ex-USS *Stallion* ATA 193)	RM 22	Levingston S.B. Co, Orange, Texas	26 Feb 1945

Converted in USA to AGOR and leased 30 October 1980. Main particulars under same class in Tugs section.

Name	No.	Builders	Commissioned
CAPOTILLO (ex-*Camillia*)	FB 101	—	—

Displacement, tons: 337
Dimensions, feet (metres): 117 × 24 × 7·8 *(35·7 × 7·3 × 2·4)*
Main engines: 2 diesels; 880 bhp = 10 knots
Complement: 29 (3 officers, 26 men)

Built in the USA in 1911. Acquired from the US Coast Guard in 1949. Underwent a major refit in Dominican Republic in 1970. Buoy Tender.

Name	No.	Builders	Commissioned
NEPTUNO (ex-*Toro*)	BA 10	John H. Mathis Co, New Jersey	Feb 1954

Displacement, tons: 72·2
Dimensions, feet (metres): 64 × 18·1 × 8 *(19·5 × 5·7 × 2·4)*
Main engine: 1 General Motors diesel = 10 knots
Complement: 7

NEPTUNO *1975, Dominican Navy*

ATLANTIDA BA 8

Dimensions, feet (metres): 40 × 12 × 6 *(12·1 × 3·6 × 1·8)*
Main engines: 2 General Motors 471 diesels

Fisher Sport design. Auxiliary yacht.

TANKERS

2 Ex-US OIL BARGES

Name	*No.*	*Builders*	*Commissioned*
CAPITAN W. ARVELO (ex-US *YO 213*)	BT 4	Ira S. Bushey Inc, Brooklyn	8 Nov 1945
CAPITAN BEOTEGUI (ex-US *YO 215*)	BT 5	Ira S. Bushey Inc, Brooklyn	17 Dec 1945

Displacement, tons: 422 light; 1 400 full load
Dimensions, feet (metres): 174 × 32·9 × 13·3 *(53·1 × 10 × 4·1)*
Gun: 1—20 mm
Main engine: 1 Union diesel; 525 hp = 8 knots
Capacity: 6 570 barrels
Complement: 23

Former US self-propelled fuel oil barges. Lent by the USA in April 1964.

CAPITAN W. ARVELO *1977, Dominican Navy*

TRAINING SHIPS

DUARTE

Displacement, tons: 60
Dimensions, feet (metres): 75 × 18 × 7 *(22·9 × 5·7 × 2·1)*
Main engine: General Motors diesel; 325 hp; 1 shaft
Complement: 30

NUBE DEL MAR BA 7

Dimensions, feet (metres): 42 × 12 × 1 *(12·8 × 3·6 × 0·3)*
Main engine: Volvo Pentax 21A; 75 hp

Auxiliary yacht used for sail training at the Naval School. Completed 1979.

2 Ex-FISHING CRAFT

ALTO VELO BA 11 **SAONA** BA 12

Used for SEAL training. Taken over 1979.

TUGS

1 Ex-US "CHEROKEE" CLASS

Name	*No.*	*Builders*	*Commissioned*
MACORIX (ex-USS *Kiowa* ATF 72)	RM 21	Charleston S.B. and D.D. Co	7 June 1943

Displacement, tons: 1 235 standard; 1 675 full load
Dimensions, feet (metres): 205 × 38·5 × 15·5 *(62·5 × 11·7 × 4·7)*
Gun: 1—3 in/50 *(76 mm)*
Main engines: Diesel-electric; 1 shaft; 3 000 bhp = 15 knots
Complement: 85

Carries additional salvage equipment. Transferred on 6 October 1972.

Radar: SPS 5D.

MACORIX *1975, Dominican Navy*

2 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
CAONABO (ex-USS *Sagamore* ATA 208)	RM 18	Gulfport Boiler and Welding Works	19 Mar 1945
— (ex-USS *Samoset* ATA 190)	—	Gulfport Boiler and Welding Works	1944

Displacement, tons: 534 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Main engines: 2 General Motors diesel-electric; 1 shaft; 1 500 bhp = 13 knots

Caonabo transferred on 1 February 1972, second on 16 October 1978.

Radar: SPS 5D.

CAONABO *1975, Dominican Navy*

2 "HERCULES" CLASS

Name	*No.*	*Builders*	*Commissioned*
HERCULES (ex-*R 2*)	RP 12	Ast. Navales Dominicanos	1960
GUACANAGARIX (ex-*R 5*)	RP 13	Ast. Navales Dominicanos	1960

Displacement, tons: 200 approx
Dimensions, feet (metres): 70 × 15·6 × 9 *(21·4 × 4·8 × 2·7)*
Main engine: 1 Caterpillar motor; 500 hp; 1 225 rpm
Complement: 8

5 HARBOUR TUGS

BOHECHIO RP 16
— DFP 2
CALDERAS RP 19
ISABELA (ex-*R 1*) RP 20
PUERTO HERMOSO RP 22

Small tugs for harbour and coastal use. Not all of uniform type and dimensions.
Bohechio, of US YTL 600 type, transferred January 1971.

ECUADOR

Ministerial

Minister of Defence:
General Andres Arrata Macias

Headquarters' Appointment

Commander-in-Chief of the Navy:
Vice-Admiral Alfredo Poveda Burbano

Diplomatic Representation

Naval Attaché in Bonn:
Captain Ethiel Rodriguez
Naval, Military and Air Attaché in London and Paris:
Brigadier General Duran
Naval Attaché in Washington:
Captain Fausto Cevallos

Personnel

(a) 1981: Total 3 800 (300 officers and 3 500 men)
(b) 2 years' selective national service

Naval Bases

Guayaquil (main naval base). Manta.
San Lorenzo and Galapagos Island (small bases).

Establishments

The Naval Academy is in Guayaquil

Maritime Air

2 Alouette III helicopters
1 IAI Arava
1 Cessna 320E
1 Cessna 177
4 Cessna T 337 F/G
2 Cessna T-41D/172H
3 Beech T-34C1
1 Beech King Air

Naval Infantry

A small force of naval infantry (700 men) exists of which a detachment is based on the Galapagos Islands and in the Eastern area.

Prefix to Ships' Names

BAE

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Patrol Submarines	2	—
Destroyers	2	—
Frigate	1	—
Corvettes	0	6
Fast Attack Craft (Missile)	3	—
Fast Attack Craft (Torpedo)	3	—
Large Patrol Craft	2	—
Coastal Patrol Craft	5	—
LST	1	—
LSMs	2	—
Survey Vessels	2	—
Tugs	6	—
Supply Ship (Small)	1	—
Floating Dock	1	—
Sail Training Ship	1	—
Miscellaneous	5	—

Mercantile Marine

Lloyd's Register of Shipping:
86 vessels of 275 142 tons gross

DELETIONS

Frigates

1972 *Guayas* (ex-US PF Type)
1978 *Presidente Alfaro*
Presidente Velasco Ibarra (5 May)

Light Forces

1976 LSP 4, 5 and 6, *Manabi* (training hulk at Naval Academy, Guayaquil)

PENNANT LIST

Submarines

S 11	Shyri
S 12	Huancavilca

Destroyer and Frigate

DD 01	Presidente Eloy Alfaro
DD 02	Morán Valverde

Corvettes

CM 11	Esmeraldas
CM 12	Manabi
CM 13	Los Rios
CM 14	El Oro
CM 15	Galapagos
CM 16	Loja

Light Forces

LC 71	25 De Julio
LC 72	24 De Mayo
LM 31	Quito
LM 32	Guayaquil
LM 33	Cuenca
LP 81	10 De Agosto
LP 82	9 De Octubre

Light Forces

LP 83	3 De Noviembre
LT 41	Manta
LT 42	Tulcan
LT 43	Nuevo Rocafuerte

Amphibious Forces

T 51	Jambeli
T 52	Tarqui
T 55	Hualcopo

Survey Vessels

O 111	Orion
O 112	Rigel
P 21	Esmeraldas

Tugs

R 101	Cayambe
R 102	Sangay
R 103	Cotopaxi
R 104	Antizana
R 105	Chimborazo

Miscellaneous

BE 01	Guayas
BT 123	Putumayo
DF 121	Amazonas
P 23	Manabi
T 53	Calicuchima
T 62	Atahualpa
UT 111	Isla de la Plata
UT 112	Isla Puná

SUBMARINES

2 TYPE 209

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SHYRI	S 11	Howaldtswerke, Kiel	Aug 1974	8 Oct 1976	16 Mar 1978
HUANCAVILCA	S 12	Howaldtswerke, Kiel	Jan 1975	18 Mar 1977	1 June 1978

Displacement, tons: 1 285 surfaced; 1 390 dived
Dimensions, feet (metres): 195·1 × 20·5 × 17·9 *(59·5 × 6·3 × 5·4)*
Torpedo tubes: 8—21 in (bow) with reloads
Main machinery: Diesel-electric; MTU diesels; 4 generators; 1 shaft; 5 000 shp
Speed, knots: 10 surfaced; 21·5 dived
Complement: 33

Ordered in March 1974 under $66 million contract. Type 209/2.

HUANCAVILCA — *6/1978, Howaldtswerke*

DESTROYERS

2 Ex-US "GEARING (FRAM I)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PRESIDENTE ELOY ALFARO (ex-USS *Holder*, DD 819)	DD 01	Consolidated Steel Corporation	1945	25 Aug 1945	18 May 1946
— (ex-USS *Southerland*, DD 743)	—	Bath Iron Works	27 May 1944	5 Oct 1944	22 Dec 1944

Displacement, tons: 2 480 standard; 3 480 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Guns: 4—5 in *(127 mm)*/38
A/S weapons: 2 triple Mk 32 torpedo tubes
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 32·5
Complement: 274

An enlarged version of the "Allen M. Sumner" class. D 01 served in the Naval Reserve Force until transferred on 1 September 1978 by sale. Overhauled in USA 1978-79 by Norfolk Shipbuilding and Dry Dock Corporation, Norfolk, Va. Recommissioned 27 June 1980. USS *Southerland* transferred by sale 17 February 1981.

"GEARING (FRAM I)" Class — *1976, Dr Giorgio Arra*

FRIGATE

Note: It is reported that consideration is being given to the acquisition of Spanish "Descubierta" class frigates.

1 Ex-US "CHARLES LAWRENCE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MORAN VALVERDE (ex-*Veinticinco de Julio,* ex-USS *Enright,* APD 66, ex-*DE 216*)	DD 02 (ex-E 12)	Philadelphia Navy Yard	22 Feb 1943	29 May 1943	21 Sep 1943

Displacement, tons: 1 400 standard; 2 130 full load
Dimensions, feet (metres): 306 × 37 × 12·6 *(93·3 × 11·3 × 3·8)*
Guns: 1—5 in *(127 mm)*/38 (Mk 30); 4—40 mm/60 (twins, Mk 1)
A/S weapons: DC racks
Main engines: GE geared turbines with electric drive; 2 shafts; 12 000 shp = 23 knots
Boilers: 2 "D" Express
Range, miles: 2 000 at 23 knots
Complement: 204

Former US high speed transport (APD, modified destroyer escort). Transferred to Ecuador on 14 July 1967 under MAP. Purchased on 30 August 1978. Can carry 162 troops. Now has small helicopter deck aft.

Radar: SPS 6 and SPS 10.

MORAN VALVERDE (old number) (Now has small helicopter deck aft) *1968, Ecuadorian Navy*

CORVETTES

0 + 6 550 TON MISSILE CORVETTES

Name	*No.*	*Builders*	*Commissioned*
ESMERALDAS	CM 11	CNR Muggiano	—
MANABI	CM 12	CNR Ancona	—
LOS RIOS	CM 13	CNR Muggiano	—
EL ORO	CM 14	CNR Ancona	—
GALAPAGOS	CM 15	CNR Muggiano	—
LOJA	CM 16	CNR Ancona	—

Displacement, tons: 685 full load
Dimensions, feet (metres): 204·4 × 30·5 × 8 *(62·3 × 9·3 × 2·5)*
Missiles: SSM; 4—MM40 (single cells)
SAM; 1 Albatros launcher (4 cell)
Guns: 1—76 mm/62 (OTO Melara Compact); 2—40 mm Breda Bofors (twin)
A/S weapons: 6 Ilas A/S torpedo tubes (triple)
Rockets: 1 SCLAR launcher
Main engines: 4 MTU MA20V956 TB92 diesels; 18 000 hp; 4 shafts
Speed, knots: 34
Range, miles: 4 400 at 14 knots
Complement: 51

Ordered in 1979. *Esmeraldas* launched 1 October 1980, *Esmeraldas* and *Los Rios* laid down 1979, *Galapagos* in 1980. *Manabi* and *El Oro* laid down early 1980, six sections being assembled. Have helicopter deck.

EL ORO (background *Manabi*) *2/1981, Commander Aldo Fraccaroli*

25 DE MAYO *1967, Ecuadorian Navy*

3 LÜRSSEN TYPE (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
QUITO	LM 31	Lürssen, Vegesack	13 July 1976
GUAYAQUIL	LM 32	Lürssen, Vegesack	22 Dec 1977
CUENCA	LM 33	Lürssen, Vegesack	17 July 1977

Displacement, tons: 255
Dimensions, feet (metres): 147·6 × 23 × 8·1 *(45 × 7 × 2·5)*
Missiles: 4 SSM Exocet (single cells)
Guns: 1—76 mm/62 (Compact); 2—35 mm/90 (twin Oerlikon)
Main engines: 4 MTU diesels; 14 000 hp; 4 shafts = 40 knots
Range, miles: 700 at 40 knots; 1 800 at 16 knots
Complement: 35

Launched—*Quito* on 20 November 1975; *Guayaquil* on 5 April 1976. *Cuenca* in December 1976.

Radar: Thomson-CSF Triton and Pollux with Vega system.

QUITO *1976, Lürssen Werft*

LIGHT FORCES

2 US "PGM-71" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
25 DE JULIO (ex-*Quito* ex-US PGM 75)	LC 71	Peterson, USA	1965
24 DE MAYO (ex-*Guayaquil,* ex-US PGM 76)	LC 72	Peterson, USA	1965

Displacement, tons: 130 standard; 145·5 full load
Dimensions, feet (metres): 101·5 × 21 × 5 *(30·9 × 6·4 × 1·5)*
Guns: 1—40 mm; 4—20 mm (twin); 2—·5 MGs
Main engines: 4 Mercedes-Benz diesels; 2 shafts; 2 200 bhp = 21 knots
Range, miles: 1 000 at 12 knots
Complement: 15

Transferred to the Ecuadorian Navy under MAP on 30 November 1965. Original names transferred to missile craft.

3 "MANTA" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
MANTA	LT 41 (ex-LT 91)	Lürssen, Vegesack	11 June 1971
TULCAN	LT 42 (ex-LT 92)	Lürssen, Vegesack	2 Apr 1971
NUEVO ROCAFUERTE	LT 43 (ex-LT 93)	Lürssen, Vegesack	23 June 1971

Displacement, tons: 119 standard; 134 full load
Dimensions, feet (metres): 119·4 × 19·1 × 6 *(36·4 × 5·8 × 1·8)*
Missiles: SSM; Gabriel
Guns: 2—30 mm Emerlec (twin); 1—twin Oerlikon unguided rocket launcher
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3 MTU diesels; 3 shafts; 9 000 bhp = 35 knots
Range, miles: 700 at 30 knots; 1 500 at 15 knots
Complement: 19

Similar design to the Chilean "Guacolda" class with an extra diesel three knots faster. *Manta* launched on 8 September 1970.
Rearmed in 1980.

MANTA (old pennant number) *1972, Ecuadorian Navy*

3 COASTAL PATROL CRAFT

Name	No.	Builders	Commissioned
10 DE AGOSTO	LP 81	Schurenstedt, Bardenfleth	Aug 1954
9 DE OCTUBRE	LP 82	Schurenstedt, Bardenfleth	Aug 1954
3 DE NOVIEMBRE	LP 83	Schurenstedt, Bardenfleth	1955

Displacement, tons: 45 standard; 64 full load
Dimensions, feet (metres): 76·8 × 13·5 × 6·3 *(23·4 × 4·6 × 1·8)*
Guns: Light MGs
Main engines: 2 Bohn & Kähler diesels; 2 shafts; 1 200 bhp = 22 knots
Range, miles: 550 at 16 knots
Complement: 9

Ordered in 1954.

LP Class *1963, Ecuadorian Navy*

4 US 65 ft COASTAL PATROL CRAFT

COMANDANCIA DE BALAO
COMANDANCIA DE GUAYAQUIL
COMANDANCIA DE SALINAS
COMANDANCIA DE MANTA

Built by Halter Marine, New Orleans. Delivered 1976.

1 US 40 ft PATROL CRAFT

Transferred 1971.

AMPHIBIOUS SHIPS

1 Ex-US "512-1152 SERIES" (LST)

Name	No.	Builders	Commissioned
HUALCOPO (ex-USS *Summit County*, LST 1148)	T 55	Chicago Bridge and Iron Co	9 June 1945

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 16·1 × 4·3)*
Guns: 8—40 mm
Main engines: 2 General Motors diesels; 1 700 bhp; 2 shafts = 11·6 knots
Complement: 119
Troops: 147

Purchased on 14 February 1977. Commissioned in November 1977 after extensive refit.

2 Ex-US "LSM-1" CLASS

Name	No.	Builders	Commissioned
JAMBELI (ex-USS *LSM 539* ex-T 31)	T 51	Brown S.B. Co, Houston	1945
TARQUI (ex-USS *LSM 555* ex-T 32)	T 52	Charleston Navy Yard	1945

Displacement, tons: 743 beaching; 1 095 full load
Dimensions, feet (metres): 203 × 34 × 8·3 *(61·9 × 10·3 × 2·5)*
Guns: 2—40 mm
Main engines: Diesels; 2 shafts; 2 800 bhp = 12·5 knots
Range, miles: 2 500 at 12 knots

Jambeli was laid down on 10 May 1945. *Tarqui* was laid down on 3 March 1945 and launched on 22 March 1945. Transferred to the Ecuadorian Navy at Green Cove Springs, Florida in November 1958.

JAMBELI (old pennant number) *1967, Ecuadorian Navy*

SURVEY VESSELS

1 Ex-US "PCE 827" CLASS

Name	No.	Builders	Commissioned
ESMERALDAS (ex-USS *Eunice*, PCE 846)	P 21 (ex-E 22, ex-E 03)	Pullman Standard Car Co, USA	4 Mar 1944

Displacement, tons: 640 standard; 903 full load
Dimensions, feet (metres): 184·5 × 33 × 9·5 *(56·3 × 10 × 2·9)*
Main engines: General Motors diesels; 2 shafts; 1 800 bhp = 15·4 knots
Range, miles: 4 300 at 10 knots
Complement: 100

Former US patrol vessel (180 ft Escort). Transferred on 29 November and by purchase on 30 August 1978. Converted to AGOR in 1979 with mixed naval and civilian crew. Name same as new corvette.

1 Ex-US "ALOE" CLASS

Name	No.	Builders	Commissioned
ORION (ex-USS *Mulberry*, AN 27)	O 111 (ex-A 101)	American S.B. Co, Cleveland, Ohio	Nov 1941

Displacement, tons: 560 standard; 805 full load
Dimensions, feet (metres): 163 × 30·5 × 11·8 *(49·7 × 9·3 × 3·6)*
Gun: 1—3 in *(76 mm)*
Main engines: Diesel-electric; 800 bhp = 13 knots
Complement: 48

Former US netlayer. Launched on 26 March 1941. Transferred to Ecuador in November 1965 as a loan and by purchase on 30 August 1978.

RIGEL O 112

Of 50 tons and 64·5 ft. Built by Halter Marine in 1975. Complement ten. Twin screw diesel survey launch.

TUGS

2 Ex-US "CHEROKEE" CLASS

Name	No.	Builders	Commissioned
CAYAMBE (ex-USS *Cusabo, ATF 155*)	R 101 (ex-R 51, ex-R 01)	Charleston S.B. & D.D. Co	28 Apr 1945
CHIMBORAZO (ex-USS *Chowanoc* ATF 100)	R 105	Charleston S.B. & D.D. Co	21 Feb 1945

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Guns: 1—3 in; 2—40 mm; 2—20 mm
Main engines: 4 diesels with electric drive; 3 000 bhp = 16·5 knots
Complement: 85

Cayambe launched on 26 February 1945. Fitted with powerful pumps and other salvage equipment. Transferred to Ecuador by lease on 2 November 1960 and renamed *Los Rios*. Again renamed *Cayambe* in 1966 and purchased on 30 August 1978. *Chimborazo* transferred 1 October 1977.

CAYAMBE (old pennant number) *1970, Ecuadorian Navy*

Name	*No.*	*Builders*	*Commissioned*
SANGAY (ex-*Loja*)	R 102 (ex-R 53)	—	1952

Displacement, tons: 295 light; 390 full load
Dimensions, feet (metres): 107 × 26 × 14 *(32·6 × 7·9 × 4·3)*
Main engine: Fairbanks-Morse diesel; speed = 12 knots

Acquired in 1964. Renamed in 1966.

Name	*No.*	*Builders*	*Commissioned*
COTOPAXI (ex-USS *R. T. Ellis*)	R 103 (ex-R 52)	Equitable Building Corporation	1945

Displacement, tons: 150
Dimensions, feet (metres): 82 × 21 × 8 *(25 × 6·4 × 2·4)*
Main engine: Diesel; 1 shaft; 650 bhp = 9 knots

Purchased from the USA in 1947.

ANTIZANA R 104

TUNGURAHUA

MISCELLANEOUS

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
GUAYAS	BE 01	Ast. Celaya, Spain	23 July 1977

Measurement, tons: 934 gross; 234 deadweight
Dimensions, feet (metres): 264 × 33·5 × 13·4 *(80 × 10·2 × 4·2)*
Main engine: 1 General Motors 12V-149 diesel; 700 bhp = 11·3 knots
Accommodation: 180

Three masted sail training ship. Launched 23 September 1976.

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
MANABI (ex-USS *Pascagoula*, PCE 874)	P 23 (ex-E 23, ex-E 02)	Albina Engine and Machine Co, USA	31 Dec 1943

Of the US "PCE 827" class transferred on 5 December 1960 and by purchase on 30 August 1978. Now used as alongside training ship at Naval Academy Guayaquil. Details as for "PCE 827" class under Survey Vessels.

1 Ex-US SUPPLY SHIP

Name	*No.*	*Builders*	*Commissioned*
CALICUCHIMA (ex-US *FS 525*)	T 53 (ex-T 34, ex-T 42)	USA	1944

Displacement, tons: 650 light; 950 full load
Dimensions, feet (metres): 176 × 32 × 14 *(53·7 × 9·8 × 4·3)*
Main engines: Diesels; 2 shafts; 500 bhp = 11 knots

Former US small cargo ship of the Army FS type. Leased to Ecuador on 8 April 1963 and purchased on 30 August 1978. Provides service to the Galapagos Islands.

2 Ex-US YP TYPE

Name	*No.*	*Builders*	*Commissioned*
ISLA DE LA PLATA	UT 111	USA	—
ISLA PUNA	UT 112	USA	—

Dimensions, feet (metres): 42 *(12·8)*
Main engine: 1 diesel

Transferred 1962. Coast Guard utility boats.

1 Ex-US YR TYPE

Name	*No.*	*Builders*	*Commissioned*
PUTUMAYO (ex-US *YR 34*)	BT 123 (ex-BT 62)	New York Navy Yard	—

Repair barge leased July 1962. Purchased on 1 December 1977.

1 Ex-US "YW" CLASS WATER CARRIER

Name	*No.*	*Builders*	*Commissioned*
ATAHUALPA (ex-US *YW 131*)	T 62 (ex-T 33, ex-T 41, ex-A 01)	Leatham D. Smith S.B. Co	1945

Displacement, tons: 415 light; 1 235 full load
Dimensions, feet (metres): 174 × 32 × 15 *(53·1 × 9·8 × 4·6)*
Main engines: General Motors diesels; 750 bhp = 11·5 knots

Acquired by the Ecuadorian Navy on 2 May 1963. Purchased on 1 December 1977.

1 Ex-US "ARD 12" CLASS FLOATING DOCK

Name	*No.*	*Builders*	*Commissioned*
AMAZONAS (ex-US *ARD 17*)	DF 121	USA	1944

Measurement, tons: 3 500 lifting capacity
Dimensions, feet (metres): 491·7 × 81 oa × 32·9 *(149·9 × 24·7 × 10)*

Transferred on loan on 7 January 1961. Suitable for docking destroyers and landing ships. Dry dock companion craft YFND 20 was leased on 2 November 1961 and purchased 1980.

EGYPT

Ministerial

Minister of Defence:
Lieutenant-General M. A. Abou-Ghazala

Headquarters' Appointment

Commander of Naval Forces:
Vice-Admiral Mohamed Aly Mohamed

Diplomatic Representation

Defence Attaché in London:
Brigadier M. F. Alou El Izz

Personnel

(a) 1981: 17 500 officers and men, including the Coast Guard (Reserves of about 12 000)
(b) 3 years' national service

Bases

Alexandria, Port Said, Mersa Matru, Port Tewfik, Hurghada and Safaqa on the Red Sea.
Naval Academy; Abu Quir.

Coastal Defences

The Samlet missiles employed for Coastal Defence are naval-manned.

Mercantile Marine

Lloyd's Register of Shipping:
278 vessels of 555 786 tons gross

Strength of the Fleet

Type	*Active*	*Building*
Submarines (Patrol)	12	—
Destroyers	5	—
Frigates	3	—
Fast Attack Craft (Missile)	24	3
Fast Attack Craft (Torpedo)	30	—
Large Patrol Craft	15	—
Coastal Patrol Craft	6	6
LCTs	3	—
LCUs	14	—
LCM	10	—
Minesweepers (Ocean)	10	—
Minesweepers (Inshore)	2	—
Training Ships	2	—
Tugs	2	—
Hovercraft	3	—
Miscellaneous	7	—

DELETIONS

Light Forces

1975 4 "108" class
4 "P 6" class

Minesweepers

1980 2 "K 8" class

SUBMARINES

Note: It is reported that China is transferring "Romeo" class to Egypt.

6 Ex-SOVIET "ROMEO" CLASS

711 722 733 744 755 766

Displacement, tons: 1 400 surfaced; 1 800 dived
Dimensions, feet (metres): 251·9 × 23·9 × 18 *(76·8 × 7·3 × 5·5)*
Torpedo tubes: 6—21 in *(533 mm)* (bow); 2—21 in (stern)
Main machinery: 2 diesels; 4 000 bhp;
2 electric motors; 4 000 hp; 2 shafts
Speed, knots: 17 surfaced; 14 dived
Range, miles: 16 000 at 10 knots surfaced
Complement: 54

One "Romeo" class was transferred to Egypt in February 1966. Two more replaced "Whiskey" class in May 1966 and another pair was delivered later that year. The sixth boat joined in 1969. Unconfirmed reports suggest two of this class have been used for spares.

"ROMEO" Class No. 766 *1978*

6 Ex-SOVIET "WHISKEY" CLASS

415 418 421 432 455 477

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 16·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); 14 torpedoes or 28 mines
Main machinery: 2 diesels; 4 000 bhp;
2 electric motors; 2 700 hp; 2 shafts
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots (surfaced)
Complement: 54

The first four "Whiskey" class were transferred from the Soviet Navy to the Egyptian Navy in June 1957. Three more arrived at Alexandria on 24 January 1958. Another was transferred to Egypt at Alexandria in January 1962. Two were replaced by "Romeo" class in February 1966.
Two "Whiskey" class sailed from Alexandria to Leningrad in late 1971 under escort, being replaced the following year. 455 is non-operational.

"WHISKEY" Class No. 418 *1980, L. and L. van Ginderen*

DESTROYERS

4 Ex-SOVIET "SKORY" CLASS

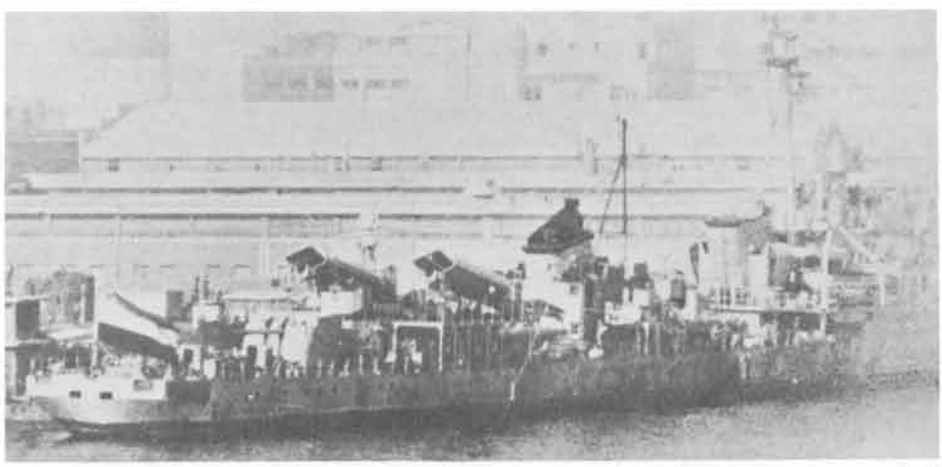
6 OCTOBER (ex-*Al Nasser*) 666 **DAMIET** 844
AL ZAFFER 822 **SUEZ** 888

Displacement, tons: 2 240 standard; 3 080 full load
Dimensions, feet (metres): 395·2 × 38·9 × 15·1 *(120·5 × 11·8 × 4·6)*
Missiles: SSM; 2 SS-N-2 *(Al Zaffer* only)
Guns: 4—5·1 in *(130 mm)*/50 (twins); 2—3·4 in *(85 mm)*/52 (not in *Al Zaffer*); 8—37 mm (twins) (6 only in *Al Zaffer*);
4—25 mm (twins) *(Al Zaffer* and *Suez)*
4—5·1 in *(130 mm)*/50 (twins); 4—57 mm (quad);
4—37 mm (twins); 4—25 mm (twins) *(6 October* and *Damiet)*
A/S weapons: 2 DCTs; 2 DC racks (unmodified)
2—16-barrelled RBU 2500; 2 DC racks; (modified)
Torpedo tubes: 10—21 in *(533 mm)* (quins) (unmodified); 5—21 in (quin) (modified)
Mines: 80 can be carried
Main engines: Geared turbines; 2 shafts; 60 000 shp
Boilers: 4 high pressure
Speed, knots: 33
Range, miles: 3 900 at 13 knots
Complement: 280

Launched in 1951. *Al Nasser* and *Al Zaffer* were delivered to the Egyptian Navy on 11 June 1956 at Alexandria. *Damiet* and *Suez* were delivered at Alexandria in January 1962. In April 1967 the original *Al Nasser* and *Damiet* were exchanged for ships with modified secondary and A/S armament which took the same names. *Al Nasser* was later renamed *6 October* to commemorate the Egyptian crossing of the Suez Canal in the 1973 Israeli war.

Missiles: In 1978 *Al Zaffer* was modified to take two SS-N-2 aft, displacing the twin 3·4-in guns and two 37 mm. These appear to have been taken from a "Komar" class.

Radar: Search: High Sieve; Cross Bird.
Navigation: Don.
Fire control: Top Bow, Half Bow or Post Lamp.



AL ZAFFER (with SS-N-2) *1978*

AL ZAFFER (before modernisation) *1977*

1 Ex-BRITISH "Z" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
EL FATEH (ex-HMS *Zenith*, ex-HMS *Wessex*)	833	Wm. Denny & Bros, Dumbarton	19 May 1942	5 June 1944	22 Dec 1944

Displacement, tons: 1 730 standard; 2 575 full load
Dimensions, feet (metres): 362·8 × 35·7 × 16 *(110·6 × 10·9 × 4·9)*
Guns: 4—4·5 in *(115 mm)*/45 (singles); 6—40 mm/60
A/S weapons: 4 DCTs
Main engines: Parsons geared turbines; 2 shafts; 40 000 shp
Boilers: 2 Admiralty 3-drum
Speed, knots: 31
Oil fuel, tons: 580
Range, miles: 2 800 at 20 knots
Complement: 186

Purchased from the UK in 1955. Before being taken over by Egypt, *El Fateh* was refitted by John I. Thornycroft & Co Ltd, Woolston, Southampton in July 1956, subsequently modernised by J. S. White & Co Ltd, Cowes, completed in July 1964.

Radar: Search: Type 960.
Tactical: Type 293. E/F Band.
Fire control: I Band.

EL FATEH *11/1977*

FRIGATES

1 Ex-BRITISH "BLACK SWAN" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TARIQ (ex-*Malek Farouq*, ex-HMS *Whimbrel*)	555 (ex-42)	Yarrow & Co Ltd, Glasgow	31 Oct 1941	25 Aug 1942	13 Jan 1943

Displacement, tons: 1 490 standard; 1 925 full load
Dimensions, feet (metres): 299 × 37·5 × 8·6 *(91·2 × 11·4 × 2·6)*
Guns: 6—4 in *(102 mm)*/45 (twins Mk 19); 4—37 mm/60; 2—20 mm
A/S weapons: 4 DCTs; DC racks
Main engines: Geared turbines; 2 shafts; 3 600 shp
Boilers: Two 3-drum type
Speed, knots: 19
Oil fuel, tons: 390
Range, miles: 4 500 at 12 knots
Complement: 180

Transferred from the UK in November 1949. Was recently to have been converted as a submarine tender—decision deferred.

TARIQ *7/1980, Marius Bar*

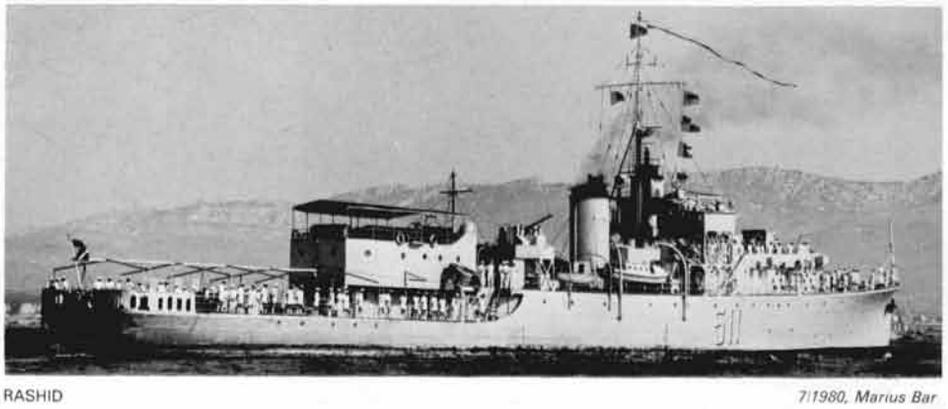
1 Ex-BRITISH "RIVER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
RASHID (ex-HMS *Spey*)	511 (ex-43)	Smith's Dock Co Ltd	18 July 1941	10 Dec 1941	19 May 1942

Displacement, tons: 1 490 standard; 2 216 full load
Dimensions, feet (metres): 301·5 × 36·5 × 14·2 *(91·9 × 11·1 × 4·3)*
Guns: 1—4 in *(102 mm)*/45; 4—37 mm/60 (twin Mk 5); 6—20 mm/70
A/S weapons: 4 DCTs
Main engines: Triple expansion; 2 shafts; 5 500 ihp
Boilers: 2 Admiralty 3-drum type
Speed, knots: 18
Oil fuel, tons: 640
Range, miles: 7 700 at 12 knots
Complement: 110

Purchased in December 1949. Has been operated as submarine support ship.

Appearance: Fitted with large deck-house aft.



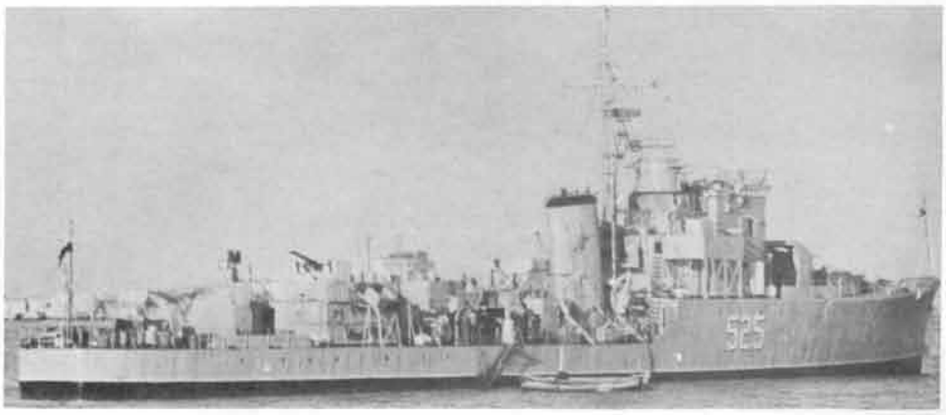
RASHID *7/1980, Marius Bar*

1 Ex-BRITISH "HUNT" (TYPE 1) CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PORT SAID (ex-*Mohamed Ali, ex-Ibrahim el Awal*, ex-HMS *Cottesmore*)	525 (ex-11)	Yarrow & Co Ltd, Glasgow	12 Dec 1939	5 Sep 1940	29 Dec 1940

Displacement, tons: 1 000 standard; 1 490 full load
Dimensions, feet (metres): 280 × 29 × 7·5 *(85·4 × 8·8 × 2·3)*
Guns: 4—4 in *(102 mm)*/45 (twin Mk 19); 2—37 mm; 2—25 mm (twin)
A/S weapons: 2 DCTs
Main engines: Parsons geared turbines; 2 shafts; 19 000 shp
Boilers: Two 3-drum type
Speed, knots: 25
Oil fuel, tons: 243
Range, miles: 2 000 at 12 knots
Complement: 133

Transferred from the Royal Navy to the Egyptian Navy in July 1950, sailed for Egypt in April 1951, after a nine months refit by J. Samuel White & Co Ltd, Cowes.



PORT SAID *1978*

LIGHT FORCES

6 "RAMADAN" CLASS (FAST ATTACK CRAFT—MISSILE)

561-565 BADR 566

Displacement, tons: 350
Dimensions, feet (metres): 170·6 × 25 × 6 *(52 × 7·6 × 1·9)*
Missiles: SSM; 4 Otomat
Guns: 1—76 mm OTO Melara Compact; 2—40 mm Breda Bofors (twin)
Main engines: 4 MTU 20 cyl diesels; 4 shafts; 18 000 hp = 37 knots
Range, miles: 2 000 at 16 knots
Complement: 40

The £150 million contract is being carried out at the Porchester yard of Vosper Thornycroft Ltd. *561* launched 6 September 1979, *562* and *564* on 12 June 1980, *566* launched 25 November 1980. All will eventually have names.

"RAMADAN" Class *1980, Vosper Thornycroft*

8 Ex-SOVIET "OSA I" CLASS (FAST ATTACK CRAFT—MISSILE)

301 312 323 341 356 378 389 390

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (singles) (see notes)
Guns: 4—30 mm (2 twin, 1 fwd, 1 aft) (+2 MGs in refitted craft)
Main engines: 3 diesels (MTU in refitted boats); 12 000 bhp = 36 knots
Complement: 30

Ten reported to have been delivered to Egypt by the Soviet Navy in 1966. Some reported sunk during the Israeli War October 1973. At least four have been refitted as above.

Missiles: All carry SA-7 Grail.

Radar: Recently refitted craft carry a new Kelvin Hughes 1006 surveillance radar and a Decca navigation radar.
Before refit: Search: Square Tie.
Fire control: Drum Tilt.
IFF: High Pole and Square Head.

"OSA I" Class *1974, USN*

4 Ex-SOVIET "KOMAR" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 68 standard; 75 full load
Dimensions, feet (metres): 87·9 × 20·3 × 4·9 *(26·8 × 6·2 × 1·5)*
Missiles: SSM; 2 SS-N-2 (singles)
Guns: 2—25 mm (twin); 2—7·62 mm (single)
Main engines: 4 CRM-12 D/S-2 diesels; 4 shafts; 5 500 hp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

Transferred from the USSR in 1962 to 1967. One of this type was sunk by Israeli jets on 16 May 1970. Two reported sunk in Israeli War October 1973. Numbered between 393 and 399. One set of SS-N-2 launchers transferred to *Al Zaffer*.

Radar: Search: Square Tie.
IFF: High Pole and Dead Duck.

"KOMAR" Class *1966, Colonel Bjorn Borg*

6 + 3? EGYPTIAN "OKTOBER" CLASS (FAST ATTACK CRAFT—MISSILE)

207 208 209 210 211 212

Displacement, tons: 82 full load
Dimensions, feet (metres): 84 × 20 × 5 *(25·5 × 6·1 × 1·3)*
Missiles: SSM; 2 Otomat
Guns: 2—30 mm British A 32 (singles)
Main engines: 4 CRM-18 D/S-2 diesels; 4 shafts; 5 400 hp = 40 knots
Range, miles: 400 at 30 knots
Complement: ? 20

Built in Alexandria 1975-76. Hull of same design as Soviet "Komar" class. The armament is of West European manufacture including British electronics.
Six refitted by Vosper Thornycroft, completed 1979-81. One of first batch was washed overboard on return trip, recovered and is being refitted by Bazán, Coruña. Reported that another three are being built in Alexandria.

Radar: Search: Marconi S 810.
Fire control: Marconi/Sperry Sapphire.

"OKTOBER" Class No 210 *7/1980, Wright and Logan*

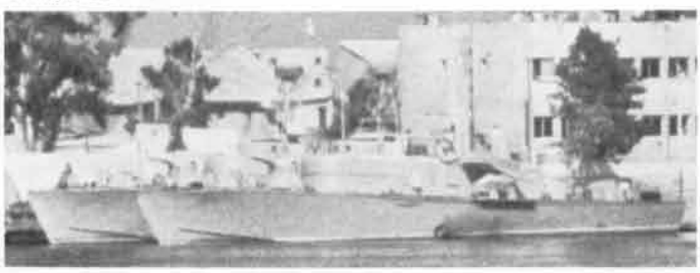
6 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—2 TORPEDO, 4 GUN)

310 321 332 343 354 365

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twin)
Rocket launcher: 8 tube *(122 mm)*
Torpedo tubes: 4—21 in *(533 mm)* (single) (see notes)
A/S weapons: 12 DCs
Main engines: 3 diesels; 3 shafts; 13 200 hp = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

One delivered from the USSR in February 1967, two more in October 1967, and three since. Four have had their torpedo tubes removed to make way for multiple BM21 rocket-launchers and one SA-7 Grail.

Radar: Search: Pot Drum.
Fire Control: Drum Tilt.
IFF: High Pole.



"SHERSHEN" Class *1974, USN*

20 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 2 or 4—25 mm (12 have after guns replaced by 122 mm 8-barrelled rocket launcher)
Torpedo tubes: 2—21 in (4—21 in in two boats) (not in boats with rockets)
A/S weapons: 12 DCs
Main engines: 4 diesels; 4 shafts; 4 800 hp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

The first twelve boats arrived at Alexandria on 19 April 1956, six more in 1960. Two were destroyed by British naval aircraft on 4 November 1956, two were sunk by the Israeli destroyer *Elath* off Sinai on 12 July 1967, two by Israeli MTBs off Sinai coast on 11 July 1967, two by Israeli air attacks in 1969, and two in the Red Sea on 22 January 1970.
Further reinforcements were sent by the USSR and several were built at Alexandria. Apparently numbered from 260. Most are now being paid off.

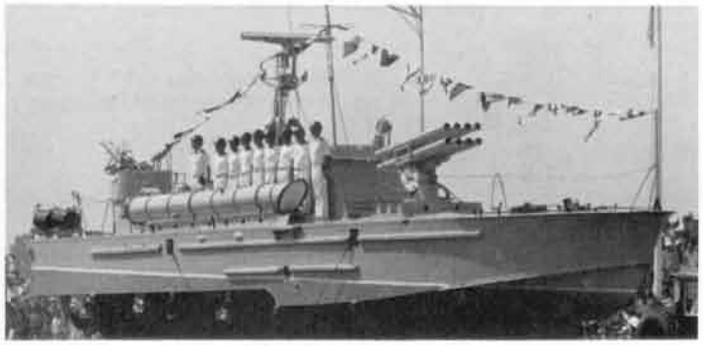
Radar: Decca in most craft.

"P 6" Class *1978*

4 Ex-SOVIET/SYRIAN "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 22 standard; 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·5 mm (twin) (aft)
Rocket launcher: 8-barrelled 122 mm rocket launcher
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 2 M50 diesels; 2 shafts; 2 400 hp = 50 knots
Complement: 12

Transferred by Syria in 1970. Decca radar is now fitted.



"P 4" Class with 8-barrelled rocket launcher *10/1974*

12 Ex-SOVIET "SO I" CLASS (LARGE PATROL CRAFT)

211 217 222 228 230 233 239 244 251 255 262 266

Displacement, tons: 170 light; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (2 twin mountings)
A/S weapons: Four 5-barrelled MBU
Mines: Can carry 12
Main engines: 3 diesels; 7 500 bhp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Eight reported to have been transferred by the USSR to Egypt in 1962 to 1967 and four others later. Some craft carry SA-7 Grail missiles and others two 21-in torpedo tubes. Six are fitted with BM21 rocket launchers.

222 *1978*

3 LARGE PATROL CRAFT

NISR NIMR THAR

Displacement, tons: 110
Gun: 1—20 mm

Built by Castro, Port Said and launched in May 1963.

0 + 6 CRESTITALIA 70 ft (COASTAL PATROL CRAFT)

Displacement, tons: 36 full load
Dimensions, feet (metres): 68·9 × 17·4 × 7 *(21 × 5·3 × ?)*
Guns: 1—30 mm; 1—20 mm
Main engines: 2—MTU 12V 331 TC92 diesels; 2 900 hp; 2 shafts = 35 knots
Range, miles: 500 at 32 knots

Ordered 1980—GRP hulls. To be naval manned, employed on Coast Guard duties.

CRESTITALIA 70 ft *1980, Crestitalia*

6 "BERTRAM" TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 8 approx
Length, feet (metres): 28 *(8·5)*
Guns: 3—12·7 mm MGs
Rocket launcher: 4 tube—122 mm

GRP hulls. Built in Miami, Florida

Now in service probably with the Coast Guard.

"BERTRAM" Type *10/1974*

AMPHIBIOUS FORCES

3 Ex-SOVIET "POLNOCHNIY I" CLASS (LCT)

915 +2

Displacement, tons: 800 full load
Dimensions, feet (metres): 239·5 × 29·2 × 5·8 *(73 × 8·9 × 1·8)*
Guns: 2—30 mm (twin)
Rocket launchers: 2—18-barrelled 140 mm launchers
Main engines: 2 diesels; 5 000 bhp = 18 knots
Complement: 40

Can carry six tanks. Transferred early 1970s.

915 *1978*

10 Ex-SOVIET "VYDRA" CLASS (LCU)

681 +9

Displacement, tons: 425 standard; 600 full load
Dimensions, feet (metres): 179·7 × 26·6 × 6·6 *(54·8 × 8·1 × 2)*
Main engines: Two 3D 12 diesels; 2 shafts; 800 bhp = 11 knots

Can carry and land up to 250 tons of military equipment and stores. For a period after the "October War" several were fitted with rocket launchers and two 37 or 40 mm guns all of which have now been removed. Built in late 1960s, transferred 1968-69.

4 Ex-SOVIET "SMB 1" CLASS (LCU)

Displacement, tons: 180 standard; 360 full load
Dimensions, feet (metres): 159·1 × 21·3 × 6·6 *(48·5 × 6·5 × 2)*
Main engines: 2 diesels; 2 shafts; 600 hp = 10 knots
Complement: 16

Delivered to the Egyptian Navy in 1965. Can carry 150 tons of military equipment.

10 LCMs

Generally used as harbour craft.

MINE WARFARE FORCES

6 Ex-SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

ASSIUT **CHARKIEH** **GHARBIA**
BAHAIRA **DAKHLIA** **SINAI**

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)*
Guns: 4—37 mm (twins); 8—14·5 mm
A/S weapons: 2 DCTs
Mines: Can carry 20
Main engines: 2 diesels; 2 shafts; 2 200 hp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Three were transferred from the Soviet Navy and delivered to Egypt 1956-59, and three since 1970. *Minya* was sunk by Israeli air attack in the Gulf of Suez on 6 February 1970 but was later replaced.

Pennant numbers: Include 650, 659, 672, 675

Radar: Ball End and Neptun.

"T 43" Class *1978*

4 Ex-SOVIET "YURKA" CLASS (MINESWEEPERS—OCEAN)

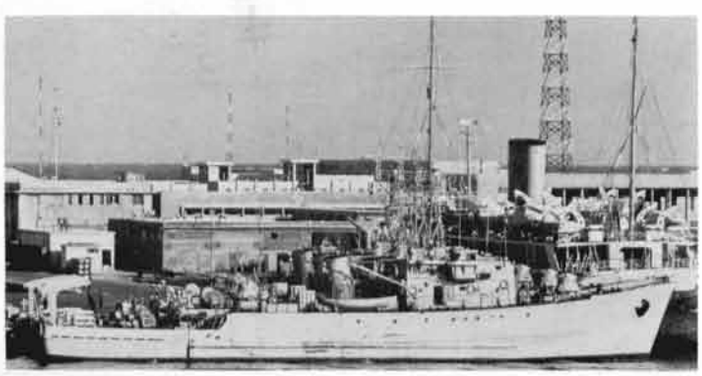
GIZA 690 **ASWAN** 695 **QENA** 696 **SOHAG** 699

Displacement, tons: 400 standard; 460 full load
Dimensions, feet (metres): 170·6 × 30·5 × 6·6 *(52 × 9·3 × 2)*
Guns: 4—30 mm (2 twin)
Mines: Can lay 10
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 18 knots
Range, miles: 1 100 at 18 knots
Complement: 45

Steel-hulled minesweepers transferred from the USSR 1970-71. Built 1963-69.

Appearance: Egyptian "Yurka" class do not carry Drum Tilt radar and have a number of ship's-side scuttles.

Radar: Navigation: Don.



ASWAN *1978*

2 Ex-SOVIET "T 301" CLASS (MINESWEEPERS—INSHORE)

EL FAYOUM 708 **EL MANUFIEH**

Displacement, tons: 150 standard; 180 full load
Dimensions, feet (metres): 128 × 18 × 4·9 *(39 × 5·5 × 1·5)*
Guns: 2—37 mm; 2—MGs
Main engines: 2 diesels; 2 shafts; 1 440 hp = 17 knots
Complement: 30

Reported to have been transferred by the USSR to Egypt in 1962; a third ship may have been transferred later.

Radar: IFF; Dead Duck and High Pole A.

EL FAYOUM *1978*

SURVEY CRAFT

SAFAGA **ABU EL GHOSON**

Of 20 tons, launched in 1968 with complement of four officers and 14 men.

MISCELLANEOUS

3 WINCHESTER (SR.N6) HOVERCRAFT

Displacement, tons: 10 normal gross weight
Dimensions, feet (metres): 48·4 × 25·3 × 15·9 (height) *(14·8 × 7·7 × 4·8)*
Guns: 2—20 mm; 1 Browning MG
Main engine: 1 Gnome Model 1050 gas turbine = 58 knots

Purchased in 1975 as refitted second-hand craft. Reportedly converted into minelayers.

2 Ex-YUGOSLAV "108" CLASS (FAST TARGET CRAFT)

Displacement, tons: 50 standard; 60 full load
Dimensions, feet (metres): 78 × 21·3 × 4·5 *(23·8 × 6·5 × 1·3)*
Main engines: 3 Packard motors; 3 shafts; 4 500 bhp = 26 knots
Complement: 10

Purchased from Yugoslavia in 1956. Similar to the boats of the US "Higgins" class. Originally a class of six. Remaining pair now fitted with reflectors and used as targets.

2 Ex-SOVIET "NYRYAT" CLASS

Diving support ships transferred in 1964.

2 Ex-SOVIET "POLUCHAT II" CLASS

Torpedo recovery craft.

2 Ex-SOVIET "OKHTENSKY" CLASS (TUGS)

AL MAKAS **ANTAR**

Two transferred to the Egyptian Navy in 1966—assembled in Egypt.

1 Ex-SOVIET "SEKSTAN" CLASS

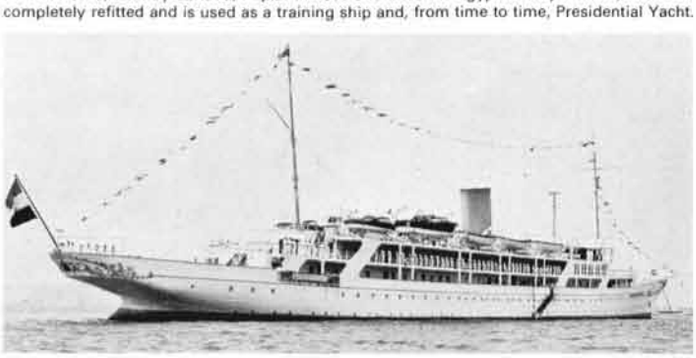
160

Used as cadet training ship.

2 TRAINING SHIPS

EL HORRIYA (ex-*Mahroussa*)

Of 4 560 tons, built by Sanuda, Poplar in 1865 and once the Egyptian Royal Yacht, has been completely refitted and is used as a training ship and, from time to time, Presidential Yacht.



EL HORRIYA *1976, USN*

INTISHAT

A smaller training ship.

SWIMMER DELIVERY VEHICLES

There is a strong underwater team in the Egyptian Navy who use, amongst other equipment, the two-man SDVs shown here. Range could be four hours at 3·4 knots.

SDV *10/1974*

EL SALVADOR

Personnel

(a) 1981: 130 officers and men
(b) Voluntary service

Ports

Acajutla, La Libertad, La Union

Mercantile Marine

Lloyd's Register of Shipping:
4 vessels of 501 tons gross

DELETION

1975 GC 1

PATROL BOATS

1 Ex-BRITISH HDML

Name	*No.*	*Builders*	*Commissioned*
GC 2 (ex-*Nohaba*)	—	UK	1942

Displacement, tons: 46
Dimensions, feet (metres): 72 × 16 × 5·5 *(21·9 × 4·9 × 1·7)*
Gun: 1—20 mm
Main engines: 2 diesels; 2 shafts = 12 knots
Complement: 16

Purchased from commercial sources in 1959.

1 SEWART TYPE

Name	*No.*	*Builders*	*Commissioned*
GC 5	—	Sewart, USA	1967

Displacement, tons: 33
Dimensions, feet (metres): 65 × 16·3 × 5 *(19·8 × 4·9 × 1·5)*
Guns: 3 MGs
Main engines: General Motors diesels; 1 600 hp = 25 knots

Transferred September 1967.

2 Ex-US CG TYPE

Name	*No.*	*Builders*	*Commissioned*
GC 3	—	USA	1950
GC 4	—	USA	1950

Displacement, tons: 10·6
Dimensions, feet (metres): 40·3 × 11·2 × 3·3 *(12·3 × 3·4 × 1)*
Gun: 1—12·7 mm
Main engines: 2 diesels; 2 shafts; 400 hp = 18 knots
Range, miles: 160 at 18 knots

3 CAMCRAFT TYPE

GC 6, GC 7, GC 8

100 ft *(30·5 m)* craft ordered in 1976.

Miscellaneous: 25 launches with outboard engines are also in service.

EQUATORIAL GUINEA

Personnel

1981: 100 officers and men

Ports

Malabo (Fernando Po), Bata (Rio Muni)

Mercantile Marine

Lloyd's Register of Shipping:
2 vessels of 6 412 tons gross

LIGHT FORCES

1 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (twins)
Torpedo tubes: 2—21 in *(533 mm)*
A/S weapons: 8 DCs
Main engines: 4 M50 diesels; 4 shafts; 4 800 hp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Doubtful if the torpedo armament is operational.

Radar: Pot Head.

1 Ex-SOVIET "POLUCHAT" CLASS

Displacement, tons: 100 standard
Dimensions, feet (metres): 98·4 × 19·7 × 5·9 *(30 × 6 × 1·8)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 shafts; 2 400 bhp = 18 knots
Range, miles: 1 500 at 10 knots
Complement: 15

Miscellaneous: Two small patrol craft.

ETHIOPIA

Personnel

(a) 1981: 1 500 officers and men
(b) Probably conscription

Naval Establishments

Massawa: Naval Base and College, established in 1956.
Embaticalla: Marine Commando Training School.
Assab: Naval Base, expanding to include a ship repair facility.
Dahlak Island: Soviet constructed forward base.

Mercantile Marine

Lloyd's Register of Shipping:
17 vessels of 23 811 tons gross

DELETION

1977 PC 12 sunk

TRAINING SHIP

1 Ex-US "BARNEGAT" CLASS

Name	*No.*	*Builders*	*Commissioned*
ETHIOPIA (ex-USS *Orca*, AVP 49)	A 01	Lake Washington S.Y.	23 Jan 1944

Displacement, tons: 1 766 standard; 2 800 full load
Dimensions, feet (metres): 310·8 × 41 × 13·5 *(94·7 × 12·5 × 4·1)*
Guns: 1—5 in/38; 5—40 mm
Main engines: 2 sets diesels; 2 shafts; 6 080 bhp = 18·2 knots
Complement: 215

Former US small seaplane tender. Laid down on 18 July 1942 and launched on 4 October 1942. Transferred from the US Navy in 1962.

ETHIOPIA *1972, Imperial Ethiopian Navy*

PATROL SHIP

1 Ex-NETHERLANDS "WILDERVANK" CLASS

Name	*No.*	*Builders*	*Commissioned*
MS 41 (ex-*Elst, M 829*)	—	Netherlands	1956

Displacement, tons: 373 standard; 417 full load
Dimensions, feet (metres): 149·8 × 28 × 7·5 *(45·7 × 8·5 × 2·3)*
Guns: 2—40 mm
Main engines: 2 Werkspoor diesels; 2 shafts; 2 500 bhp = 14 knots
Oil fuel, tons: 25 tons
Range, miles: 2 500 at 10 knots
Complement: 38

Launched on 21 March 1956. Purchased by Ethiopia and transferred from the Royal Netherlands Navy in 1971. Still may retain some minesweeping capability.

Missiles: It has been reported that MS 41 has been fitted for launching SS-12 missiles.

MS 41 *1978*

LIGHT FORCES

2 Ex-SOVIET "OSA II" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (single launchers)
Guns: 4—30 mm (twin)
Main engines: 3 M504 diesels; 15 000 hp; 3 shafts = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

First delivered spring 1978, and the other in September 1980. Because of Ethiopian naval inexperience with such craft and missiles it is presumed that Soviet "advisers" will remain embarked. The presence of these craft in the Dahlak islands, where the navigable Red Sea is only 60 miles wide, could pose a threat to shipping not oriented to Ethiopia or the USSR.

Radar: Surveillance: Square Tie.
Fire control: Drum Tilt.
IFF: Square Head and High Pole B.

"OSA II" Class

2 Ex-SOVIET "MOL" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 205 standard; 245 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Guns: 4—30 mm (twins)
Torpedo tubes: 4—21 in (533 mm)
A/S weapons: 12 DCs
Main engines: 3 M504 diesels; 3 shafts; 15 000 hp = 40 knots
Range, miles: 1 250 at 14 knots
Complement: 25 (3 officers, 22 ratings)

Transferred January 1978. It is not certain whether the torpedo tubes are shipped. This class requires engine overhaul after 2 500 hours operating.

Radar: Surveillance: Pot Drum.
Fire control: Drum Tilt.
IFF: Square Head, High Pole B.

"MOL" Class (without torpedo tubes) *1976*

4 SWIFT TYPE (LARGE PATROL CRAFT)

P 201 **P 202** **P 203** **P 204**

Displacement, tons: 118 full load
Dimensions, feet (metres): 105 × 23·6 × 6·5 *(32 × 7·2 × 2)*
Guns: 4 Emerlec 30 mm (twins)
Main engines: 2 MTU MB 16V538 TB90 diesels; 2 shafts; 7 000 hp = 30 knots
Range, miles: 1 200 at 18 knots
Complement: 21

Six ordered in 1976 of which four were delivered in April 1977 before the cessation of US arms sales to Ethiopia. Aluminium hulls built by Swiftships, Louisiana.

Radar: Decca RM 916.

1 Ex-YUGOSLAV "KRALJEVICA" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	—	Yugoslavia	1953

Displacement, tons: 180 standard; 202 full load
Dimensions, feet (metres): 134·5 × 20·7 × 5·5 *(41 × 6·3 × 1·7)*
Guns: 1—40 mm; 4—20 mm
A/S weapons: DCs
Main engines: 2 MAN diesels; 2 shafts; 3 000 bhp = 17 knots
Range, miles: 1 500 at 12 knots
Complement: 45

Transferred 1975.

"KRALJEVICA" Class *Yugoslav Navy*

4 "PGM 53" AND USCG "CAPE" CLASSES (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PC 11 (ex-US CG WVP 95304)	—	Peterson, USA	1958
PC 13 (ex-USN PGM 53)	—	Peterson, USA	1961
PC 14 (ex-USN PGM 54)	—	Peterson, USA	1961
PC 15 (ex-USN PGM 58)	—	Peterson, USA	1962

Displacement, tons: 145·5 full load
Dimensions, feet (metres): 95 × 19 × 5·2 *(29 × 5·8 × 1·6)*
Guns: 1—40 mm; 1—5 MG
A/S weapons: 1 Mousetrap
Main engines: 4 diesels; 2 shafts; 2 200 bhp = 21 knots
Range, miles: 1 500 at cruising speed
Complement: 20

Loss: PC 12 sunk by Ethiopian Air Force in 1977 while trying to defect.

4 "SEWART" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
GB 21	—	Sewart Inc, Berwick	1966
GB 22	—	Sewart Inc, Berwick	1966
GB 23	—	Sewart Inc, Berwick	1967
GB 24	—	Sewart Inc, Berwick	1967

Displacement, tons: 15
Length, feet (metres): 40 *(12·2)*
Guns: 2—5 MGs
Speed, knots: 20
Complement: 7

LANDING CRAFT

There are two of the US LCM type and two of the US LCVP type. First two were bought in 1962 and others in 1971.

2 FRENCH "EDIC" CLASS

L 1035 **L 1036**

Displacement, tons: 670 full load
Dimensions, feet (metres): 193·5 × 39·3 × 4·2 *(59 × 12 × 1·3)*
Guns: 2—20 mm (twin)
Main engines: 2 MGO diesels; 2 shafts; 1 000 hp = 8 knots
Range, miles: 1 800 at 8 knots
Complement: 16

Completed by SFCN, Villeneuve la Garonne, France in May 1977.

1 Ex-SOVIET "T 4" CLASS (LCVP)

Displacement, tons: 93 full load
Dimensions, feet (metres): 65·3 × 18·4 × 4·6 *(19·9 × 5·6 × 1·4)*
Main engines: 2 diesels; 600 hp = 10 knots
Complement: 4

Transferred May 1979.

FIJI

On 12 June 1974 the Royal Fiji Military Forces were authorised to raise a Naval Squadron to carry out Fishery Protection, Surveillance, Hydrographic Surveying and Coast Guard duties. The RFMF is under the authority of the Minister for Home Affairs. Training carried out in Australia.

Ministerial

Minister for Home Affairs:
Hon. S. Momoivalu

Commanding Officers

RFMF:
Colonel R. I. Thorpe

Naval Squadron:
Commander S. B. Brown OBE VRD

Personnel

1981: 160 (20 officers, 140 sailors)

Base

HMFS *Viti*, Suva

Prefix to Ships' Names

HMFS

Mercantile Marine

Lloyd's Register of Shipping:
43 vessels of 14 773 tons gross

3 Ex-US "REDWING" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
KIKAU (ex-USS *Woodpecker, MSC 209*)	204	Bellingham SY, USA	3 Feb 1956
KULA (ex-USS *Vireo, MSC 205*)	205	Bellingham SY, USA	7 June 1955
KIRO (ex-USS *Warbler, MSC 206*)	206	Bellingham SY, USA	23 July 1955

Displacement, tons: 370 full load
Dimensions, feet (metres): 144 × 28 × 8·5 *(43·9 × 8·5 × 2·5)*
Guns: 1—20 mm; 2—5 MGs
Main engines: 2 General Motors diesels; 2 shafts; 1 760 bhp = 12 knots
Range, miles: 2 500 at 10 knots
Complement: 39

First pair transferred on 14 October 1975 and the third in June 1976. *Kiro* and *Kula* refitted—magnetic MS equipment removed and deckhouse built aft with helicopter platform on top.

KULA *1980, RFMF*

RUVE

Displacement, tons: 300
Dimensions, feet (metres): 91·8 × 22 × 6·6 *(28 × 6·7 × 2)*
Main engines: 2 Rolls Royce diesels = 10 knots
Range, miles: 1 900 cruising
Complement: 17

Built in Fiji Government Shipyard in 1970. Converted for surveying 1979 and replaced the previous *Ruve* which was scrapped in January 1979.

FINLAND

Headquarters' Appointment

Commander-in-Chief Finnish Navy:
Rear-Admiral Jan Klenberg

Diplomatic Representation

Defence Attaché in London:
Lieutenant-Colonel Ilkka Ranta

Naval Attaché in Moscow:
Colonel Kalevi Markkula

Naval Attaché in Paris:
Lieutenant-Colonel Jorma Kaarnola

Naval Attaché in Washington:
Captain Aarno Kavisto

Personnel

(a) 1981: 2 500 (200 officers and 2 300 ratings)
(b) 8-11 months' national service

Treaty Limitations

The Finnish Navy is limited by the Treaty of Paris (1947) to 10 000 tons of ships and 4 500 personnel. Submarines and torpedo boats are prohibited.

Bases

Helsinki (Naval Staff, training establishments).
Turku (main Fleet Base)

Fleet Organisation

Turku: Gunboat Flotilla; ("Turunmaa" and "Nuoli" classes)
Missile Flotilla; *(Louhi,* "Tuima" class, *Isku)*
Mine Warfare Flotilla; minelayers and sweepers.
Helsinki: Patrol Craft Flotilla; ("R" class).

Fleet Plan

In 1974 it was decided to build towards a fleet consisting of six Frigates/Corvettes, two Minelayers, 24 Fast Attack Craft, 14 MSI and eight Large Patrol Craft for the Frontier Guard. In 1980 the rapidly rising cost of ship construction resulted in a recasting of this plan. The number of Frigates/Corvettes has been reduced to the two "Turunmaa" class and the two Minelayers have been increased to three with the conversion of *Hämeenmaa (Pohjanmaa* frequently being absent on training cruises). In addition a larger number of FACs are to be built to the 280-ton design listed under Light Forces. *Hurja* (listed in the same section) is an experimental prototype for a considerable class of Coastal Patrol Craft. At the same time it was stated that, for the time being, existing MSIs and auxiliary minesweepers would be adequate.

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Corvettes	2	—
Fast Attack Craft (Missile)	5	1
Fast Attack Craft (Gun)	12	—
Large Patrol Craft	5	—
Coastal Patrol Craft	1	—
Minelayers	3	—
Minesweepers, Inshore	6	(8)
HQ Ship	1	—
Tugs	3	—
Support Ships	6	—
Transport Craft	13	—
Transports (LCUs)	14	—
Cable Ship	1	—
Icebreakers	9	—

Frontier Guard

Large Patrol Craft	5	—
Coastal Patrol Craft	48	—

Hydrographic Department

This office and the survey ships come under the Ministry of Trade and Industry.

Frontier Guard

All Frontier Guard vessels come under the Ministry of the Interior.

Icebreakers

All these ships work for the Board of Navigation.

Mercantile Marine

Lloyd's Register of Shipping:
354 vessels of 2 530 091 tons gross

DELETIONS

Frigates

1975 *Matti Kurki* (ex-British "Bay" class)
1980 *Uusimaa*

Light Forces

1975 *Tursas* (Large Patrol Craft)
1977 *Vasama I* (Fast Attack Craft)
1979 *Nuoli 9, Vasama II* (Fast Attack Craft)
1980 *Nuoli 4*

Mine Warfare Forces

1975 *Ruotsinsalmi*

Coast Guard Vessel

1980 *Eckerö*

Miscellaneous

1978 *Pyhtää* (ex-DR 2)
1980 *Purha, Pirttisaari, Pikkala, Pyhtää, Pellinki, Ekkero* (F.G.)

PENNANT LIST

Corvettes

03	Turunmaa
04	Karjala

Light Forces

11	Tuima
12	Tuisku
14	Tuuli
15	Tyrsky
16	Isku

Light Forces

31-33, 35-38, 40-43	"Nuoli" class
51	Rihtniemi
52	Rymättylä
53	Ruissalo
54	Raisio
55	Röytta

Mine Warfare Forces

01	Pohjanmaa
02	Hämeenmaa
05	Keihässalmi
21-26	"Kuha" class

Miscellaneous

90	Louhi
121	Vahakari
235	Hankoniemi

CORVETTES

2 "TURUNMAA" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TURUNMAA	03	Wärtsilä, Helsinki	Mar 1967	11 July 1967	29 Aug 1968
KARJALA	04	Wärtsilä, Helsinki	Mar 1967	16 Aug 1967	21 Oct 1968

Displacement, tons: 660 standard; 770 full load
Dimensions, feet (metres): 243·1 × 25·6 × 7·9 *(74·1 × 7·8 × 2·4)*
Guns: 1—4·7 in *(120 mm)* Bofors fwd; 2—40 mm
A/S weapons: 2 DCTs; 2 DC racks
Main engines: CODOG; 3 Mercedes-Benz (MTU) diesels; 3 000 bhp; 1 Rolls-Royce Olympus TM1A gas turbine; 15 000 hp = 35 knots. On diesels = 17 knots (see *Engineering* note)
Complement: 70

Ordered on 18 February 1965 from Wärtsilä, Helsinki. Flush decked. Rocket flare guide rails on sides of 4·7-in *(120 mm)* turret. Fitted with Vosper Thornycroft fin stabiliser equipment. Due for modification, possibly with SAM.

Engineering: The exhaust system is trunked on either side of the quarter-deck, the two plumes coalescing some 50 ft abaft the stern. This has two advantages—it provides an infra-red decoy and can drive the ships at up to 12 knots without turning the screws.

Radar: Search and Tactical: M20 Series (HSA).

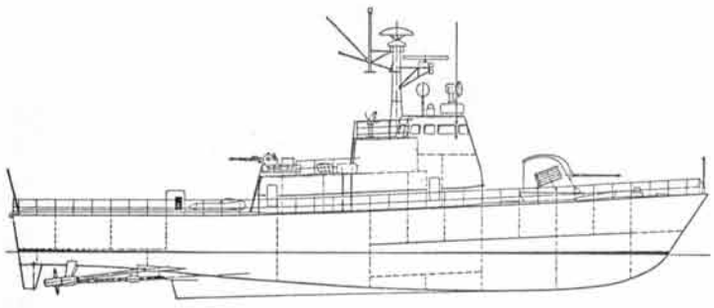
KARJALA *1978, Finnish Navy*

LIGHT FORCES

1 + ? NEW CONSTRUCTION (FAST ATTACK CRAFT—GUN)

Displacement, tons: 280 standard; 300 full load
Dimensions, feet (metres): 147·6 × 29·2 × 9·9 *(45 × 8·9 × 3)*
Main engines: 3 diesels (or gas turbines); 12 000 shp; 3 shafts = 32 knots
Complement: 32

This prototype delivered in July 1981 represents the standard hull type to be used by the Finish navy for the next 30 years. The armament can be altered to suit the planned role. Hull and superstructure of light alloy.



NEW CONSTRUCTION *1980, Finish Navy*

4 "TUIMA" CLASS (FAST ATTACK CRAFT—MISSILE)

TUIMA 11 **TUISKU** 12 **TUULI** 14 **TYRSKY** 15

Displacement, tons: 165 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (singles)
Guns: 4—30 mm (twins)
Main engines: Three M504 diesels; 15 000 hp
Speed, knots: 36
Range, miles: 800 at 25 knots
Complement: 30

Ex-Soviet "Osa II" class purchased from the USSR 1974-75. New construction but with Finnish electronics.

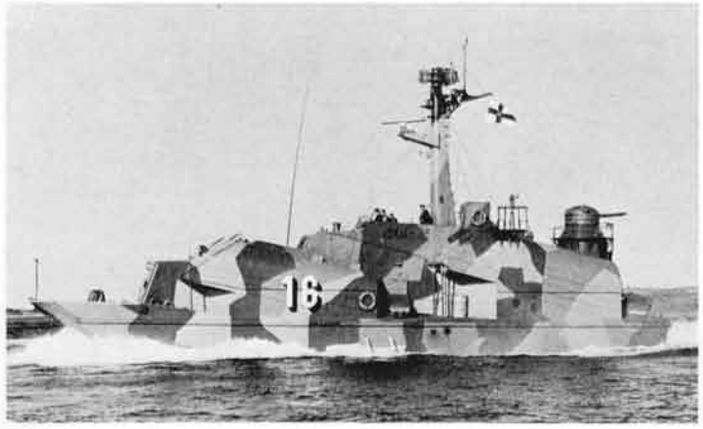
TUULI *1978, Finnish Navy*

1 EXPERIMENTAL CRAFT—MISSILE

Name	*No.*	*Builders*	*Commissioned*
ISKU	16	Reposaaron, Konepaja	1970

Displacement, tons: 140 full load
Dimensions, feet (metres): 86·5 × 28·6 × 6·4 *(26·4 × 8·7 × 1·8)*
Missiles: SSM; 4 SS-N-2 (singles)
Guns: 2—30 mm (1 twin)
Main engines: 4 Soviet M50 diesels; 3 600 bhp = 15 knots
Complement: 25

Guided missile craft of novel design built for training and experimental work. The construction combines a missile boat armament on a landing craft hull. Laid down November 1968 and launched 4 December 1969.



ISKU *1979, Finnish Navy*

11 "NUOLI" CLASS (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
NUOLI 1—3,	31—33,	Laivateollisuus, Turku	1961—66
5—8,	35—38,		
10—13	40—43		

Displacement, tons: 40 standard
Dimensions, feet (metres): 72·2 × 21·7 × 5 *(22 × 6·6 × 1·5)*
Guns: 1—40 mm; 1—20 mm
A/S weapons: 4 DCs
Main engines: 3 Soviet M50 diesels; 2 700 bhp = 40 knots
Complement: 15

Designed by Laivateollisuus, Turku. Delivery dates—14 September 1961, 19 October 1961, 1 November 1961, 6 July 1962, 3 August 1962, 22 August 1962, 10 October 1962, 5 May 1964, 5 May 1964, 30 November 1964, 12 October 1966. This class is split into two: *Nuoli 1* (1-8) and *Nuoli 2* (10-13). The main difference is a lower superstructure in *Nuoli 2*.

Modernisation: Six of this class to be modernised under the 1979 estimates, remainder to be scrapped.

Radar: I band Decca.

NUOLI 8 *1978, Finnish Navy*

1 EXPERIMENTAL COASTAL PATROL CRAFT (TYPE 80)

HURJA

Displacement, tons: 50
Dimensions, feet (metres): 72·2 × 16·4 × — *(22 × 5 × —)*

Completed 1981. GRP hull.

HURJA *1980, Finnish Navy*

3 "RUISSALO" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
RUISSALO	53	Laivatteollisuus, Turku	11 Aug 1959
RAISIO	54	Laivatteollisuus, Turku	12 Sep 1959
RÖYTTA	55	Laivatteollisuus, Turku	14 Oct 1959

Displacement, tons: 110 standard; 130 full load
Dimensions, feet (metres): 108·9 × 18·5 × 5·9 *(33 × 5·6 × 1·8)*
Guns: 1—40 mm; 1—20 mm
A/S weapons: 1 Squid mortar; DCs
Mines: Can lay mines
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 500 bhp = 17 knots
Complement: 20

Ordered in January 1958. Launched on 16 June, 2 July and 2 June 1959. *Ruissalo* was modernised in 1976, other pair in 1980.

Radar: Decca.

Sonar: One hull-mounted.

RUISSALO *1979, Finnish Navy*

2 "RIHTNIEMI" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
RIHTNIEMI	51	Rauma-Repola, Rauma	21 Feb 1957
RYMÄTTYLÄ	52	Rauma-Repola, Rauma	20 May 1957

Displacement, tons: 90 standard; 110 full load
Dimensions, feet (metres): 101·7 × 18·7 × 5·9 *(31 × 5·6 × 1·8)*
Guns: 1—40 mm; 1—20 mm; 2 MGs
A/S weapons: 2—RBU 1200; DCs
Mines: Can lay mines
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 500 bhp = 18 knots
Complement: 20

Ordered in June 1955, launched in 1956. Cp propellers. Both modernised for A/S work—further modernisation scheduled in 1979 Estimates.

RYMÄTTYLÄ *1980, Finnish Navy*

MINE WARFARE FORCES

1 MINELAYER

Name	*No.*	*Builders*	*Commissioned*
POHJANMAA	01	Wärtsilä, Helsinki	8 June 1979

Displacement, tons: 1 000 standard; 1 100 full load
Dimensions, feet (metres): 255·8 × 37·7 × 9·8 *(78·2 × 11·6 × 3)*
Guns: 1—120 mm Bofors TAK 120 L/46 (fwd); 2—40 mm Bofors SAK 40 L/70; 4—23 mm (twins)
A/S weapons: 2 A/S rocket launchers
Mines: 120
Main engines: 2 Wärtsilä Vasa 16V22B diesels; 5 850 bhp; 2 shafts (cp propellers) = 19 knots
Complement: 90

Design completed 1976. Also to serve as training ship. Will carry 70 trainees accommodated in portacabins on the mine deck. Helicopter area on quarter-deck but no hangar. Ordered late 1977. Laid down May 1978. Launched 28 August 1978. Has bow thruster.

Electronics: ECM system.

Fire control: Optronic director. Philips 9LV 100 FCS.

Radar: Search, surveillance and fire control.

Sonar: Two sets.

POHJANMAA *1980, Finnish Navy*

1 Ex-SOVIET "RIGA" CLASS (MINELAYER)

HÄMEENMÄA 02

Displacement, tons: 1 000 standard; 1 320 full load
Dimensions, feet (metres): 300·1 × 33·1 × 10·5 *(91·5 × 10·1 × 3·2)*
Guns: 3—3·9 in *(100 mm)* single; 2—40 mm; 2—30 mm (twin) (in bow)
A/S weapons: 1 Hedgehog; 4 DC projectors
Mines: 50
Main engines: 2 geared turbines; 2 shafts; 20 000 shp
Speed, knots: 28
Boilers: 2
Range, miles: 2 000 at 15 knots
Complement: 175

Built in USSR in 1957. Purchased from the USSR and transferred to the Finnish Navy on 14 May 1964. Armament modified in 1971 with extra twin 30 mm.
Modified in 1979 as minelayer.

Radar: Search: Slim Net.
Fire control: Sun Visor A (with Wasp Head fire control system).
Navigation: Decca.
IFF: High Pole and Square Head.

Sonar: Hull-mounted.

HÄMEENMÄA *1980, Finnish Navy*

1 MINELAYER

Name	*No.*	*Builders*	*Commissioned*
KEIHÄSSALMI	05	Valmet, Helsinki	1957

Displacement, tons: 360
Dimensions, feet (metres): 184·8 × 25·4 × 6·6 *(56 × 7·7 × 2)*
Guns: 4—30 mm (twins); 2—20 mm
Mines: Up to 100 capacity
Main engines: 2 Wärtsilä diesels; 2 shafts; 1 600 bhp = 15 knots
Complement: 60

Contract dated June 1955. Launched on 16 March 1957. Armament modified in 1972.

Radar: Search and Tactical: I band Decca.
Fire control: Drum Tilt.

KEIHÄSSALMI *1979, Finnish Navy*

6 "KUHA" CLASS (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
KUHA 21—26	21—26	Laivatteollisuus, Turku	1974—75

Displacement, tons: 90
Dimensions, feet (metres): 87·2 × 22·7 × 6·6 *(26·6 × 6·9 × 2)*
Guns: 2—23 mm (twin); 1—20 mm
Main engines: 2 diesels; 1 shaft (cp); 600 shp; = 12 knots
Complement: 15

All ordered 1972. Fitted for magnetic, acoustic and pressure-mine sweeping. Have active rudders. *Kuha 21* completed 28 June 1974. *Kuha 26* in late 1975. Hulls are of GRP.

Radar: Decca.

KUHA 22 *1979, Finnish Navy*

ICEBREAKERS

(Controlled by Board of Navigation)

Note: There is also the West German owned, Finnish manned, icebreaker *Hansa*, of the "Karhu" class, completed on 25 November 1966, which operates off West Germany in winter and off Finland at other times.

2 "URHO" CLASS

Name	*No.*	*Builders*	*Commissioned*
URHO	—	Wärtsilä, Helsinki	5 Mar 1975
SISU	—	Wärtsilä, Helsinki	28 Jan 1976

Displacement, tons: 7 800 *(Urho)*; 7 900 *(Sisu)* standard; 9 500 full load
Dimensions, feet (metres): 343·1 × 78·1 × 23·9 *(104·6 × 23·8 × 8·3)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 5 Wärtsilä-SEMT-Pielstick diesels; 25 000 bhp
Electric motors; 22 000 shp; 2 shafts fwd, 2 aft; = 18 knots
Complement: 47

Ordered on 11 December 1970 and 10 May 1971 respectively. Fitted with two screws aft, taking 60 per cent of available power and two forward, taking the remainder. Sisters to Swedish "Atle" class.

SISU *1977, Wärtsilä*

3 "TARMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
TARMO	—	Wärtsilä, Helsinki	1963
VARMA	—	Wärtsilä, Helsinki	1968
APU	—	Wärtsilä, Helsinki	25 Nov 1970

Displacement, tons: 4 890
Dimensions, feet (metres): 281 × 71 × 23·9 *(85·7 × 21·7 × 7·3)*
Aircraft: 1 helicopter
Main engines: Wärtsilä-Sulzer diesels; electric drive; 4 shafts (2 screws fwd 2 screws aft); 12 000 shp = 17 knots

APU *1977, Finnish Navy*

3 "KARHU" CLASS

Name	*No.*	*Builders*	*Commissioned*
KARHU	—	Wärtsilä, Helsinki	Dec 1958
MURTAJA	—	Wärtsilä, Helsinki	1959
SAMPO	—	Wärtsilä, Helsinki	1960

Displacement, tons: 3 540
Dimensions, feet (metres): 243·2 × 57 × 21 *(74·2 × 17·4 × 6·4)*
Main engines: Diesel-electric; 4 shafts; 7 500 bhp = 16 knots

Karhu was launched on 22 October 1957, *Murtaja* was launched on 23 September 1958.

MURTAJA *1978, Finnish Navy*

1 "VOIMA" CLASS

Name	*No.*	*Builders*	*Commissioned*
VOIMA	—	Wärtsilä, Helsinki	1954 (Recommissioned 10 Oct 1979)

Displacement, tons: 4 415
Dimensions, feet (metres): 274 × 63·7 × 23 *(83·6 × 19·4 × 7)*
Main engines: 6 Wärtsilä Vasa 16 V 22 diesels; 17 460 hp; four electric motors:
4 shafts (2 fwd, 2 aft) each with a 2 500 kW motor; total 13 700 hp = 16·5 knots
Oil fuel, tons: 740

Launched in 1953. Two propellers forward and aft. Modernised in 1978-79 with new main machinery and a remodelled superstructure and living quarters by Wärtsilä. This has given her a life expectancy until 1994.
Voima when built was sister to the Soviet "Kapitan Belousov" class and the Swedish *Oden*.

VOIMA *10/1979, Wartsila*

MISCELLANEOUS

(Under Naval control)

1 Ex-ICEBREAKER (HEADQUARTERS' SHIP)

Name	*No.*	*Builders*	*Commissioned*
LOUHI (ex-*Sisu*)	90	Wärtsilä, Helsinki	1939

Displacement, tons: 2 075
Dimensions, feet (metres): 210·2 × 46·5 × 16·8 *(64·1 × 14·2 × 5·1)*
Guns: 4—40 mm
Main engines: 2 sets Atlas Polar diesels with electric drive; 2 shafts and a bow propeller; 4 000 hp = 16 knots
Complement: 28

Launched on 24 September 1938. Used as submarine depot ship 1939-45. Converted 1975 to be HQ and Logistics ship for fast attack craft.

LOUHI *1978, Finnish Navy*

4 "VALAS" CLASS (TRANSPORTS)

VAHAKARI 121 +3

Displacement, tons: 300
Dimensions, feet (metres): 100·4 × 26·5 × 10·4 *(30·6 × 8·1 × 3·2)*
Guns: 2—23 mm (twin); 1—20 mm
Main engine: 1 diesel; 1 450 hp = 12 knots
Complement: 11

Completed 1979-80.

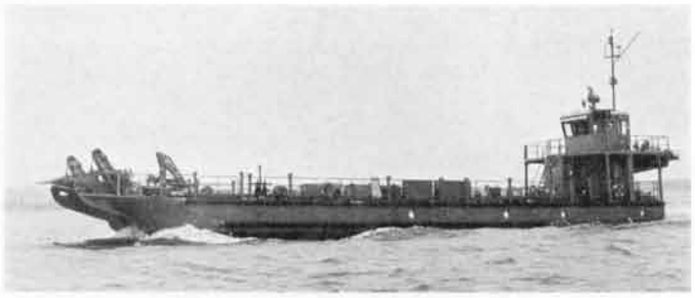
VAHAKARI *1980, Finnish Navy*

3 "KAMPELA" CLASS (LCU TRANSPORTS)

Name	*No.*	*Builders*	*Commissioned*
KAMPELA 1	—	Enso Gutzeitoj	29 July 1976
KAMPELA 2	—	Enso Gutzeitoj	21 Oct 1976
KAMPELA 3	—	Finnmekano	23 Oct 1979

Displacement, tons: 90
Dimensions, feet (metres): 106·6 × 26·2 × 4·9 *(32·5 × 8 × 1·5)*
Guns: 2—20 mm
Mines: 7
Main engines: 2 Scania diesels; 460 bhp = 9 knots
Complement: 10

Can be used as amphibious craft, transports, minelayers or for shore support. Armament can be changed to suit role.



"KAMPELA" Class *1977, Finnish Navy*

6 "KALA" CLASS (LCU TRANSPORTS)

KALA 1—6

Displacement, tons: 60
Dimensions, feet (metres): 88·6 × 26·2 × 6 *(27 × 8 × 1·8)*
Gun: 1—20 mm
Mines: 34
Main engines: 2 Valmet diesels; 360 bhp = 9 knots
Complement: 10

Completed between 20 June 1956 *(Kala 1)* and 4 December 1959 *(Kala 6)*. Can be used as transports, amphibious craft, minelayers or for shore support. Armament can be changed to suit role.

5 "KAVE" CLASS (LCU TRANSPORTS)

KAVE 1—4 and 6

Displacement, tons: 27
Dimensions, feet (metres): 59 × 16·4 × 4·3 *(18 × 5 × 1·3)*
Gun: 1—20 mm
Main engines: 2 Valmet diesels; 360 hp = 9 knots
Complement: 3

Completed between 16 November 1956 *(Kave 1)* and 1960 *(Kave 6* on 19 December 1960*)*. Built by Haminan Konepaja Oy *(Kave 1)* remainder by F. W. Hollming, Rauma. *Kave 5* lost in tow 15 December 1960.

KAVE 4 *1961, Finnish Navy*

3 "PUKKIO" CLASS (SUPPORT SHIPS)

PANSIO PORKKALA PUKKIO

Displacement, tons: 162 standard
Dimensions, feet (metres): 93·4 × 19·2 × 9 *(28·5 × 6 × 2·7)*
Guns: 1—40 mm; 1—20 mm
Mines: 20
Main engines: Diesels; 300 bhp = 9 knots

Built by Valmet, Turku. Delivered 25 May 1947, 1940 and 1939 respectively. Vessels of the tug type used as transports, minesweeping tenders, minelayers and patrol vessels.

PUTSAARI (CABLE SHIP)

Displacement, tons: 403
Dimensions, feet (metres): 149·5 × 28·6 × 8·2 *(45·6 × 8·7 × 2·5)*
Main engine: 1 Wärtsilä diesel; 510 bhp = 10 knots
Complement: 20

Built by Rauma Repola, Rauma. Ordered 11 November 1963. Launched in December 1965. Commissioned 1966. Fitted with bow-thruster and active rudder, two 10 ton cable winches and accommodation for 20. Strengthened for ice operations.

PUTSAARI *1979, Finnish Navy*

TRANSPORT CRAFT

3 "HAUKI" CLASS

HANKONIEMI 235 +2

Displacement, tons: 45
Dimensions, feet (metres): 47·6 × 15·1 × 7·2 *(14·5 × 4·6 × 2·2)*
Main engines: 2 turbocharged Valmet 611 CSM diesels; 293 shp; 1 shaft = 12 knots
Complement: 4

The first three of a new class to replace the six craft of the 20 year old "H" class built by Valmet's Kotka yard. Ice strengthened with a capacity of 6 tons or 45 passengers to serve isolated island defences. Completed 1979.

HANKONIEMI *1980, Valmet*

FRONTIER GUARD

(Controlled by Ministry of the Interior)

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
VALPAS	—	Laivateollisuus, Turku	21 July 1971

Displacement, tons: 545
Dimensions, feet (metres): 159·1 × 27·9 × 12·5 *(48·5 × 8·5 × 3·8)*
Gun: 1—20 mm
Main engine: 1 Werkspoor diesel; 2 000 bhp = 15 knots
Complement: 22

An improvement on the *Silma* design. Ordered 14 July 1969, launched 22 December 1970. First frontier guard ship with sonar. Ice strengthened.

Sonar: Hull-mounted set.

VALPAS *1975, Finnish Navy*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
TURVA	—	Laivateollisuus, Turku	15 Dec 1977

Displacement, tons: 550
Dimensions, feet (metres): 159·1 × 28 × 14 *(48·5 × 8·6 × 3·9)*
Gun: 1—20 mm
Main engines: 2 Wärtsilä diesels; 1 shaft; 2 000 shp = 16 knots

Ordered 24 June 1975. Improved "Valpas" design.

TURVA *1978, Finnish Navy*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
SILMÄ	—	Laivateollisuus, Turku	19 Aug 1963

Displacement, tons: 530
Dimensions, feet (metres): 158·5 × 27·2 × 14·1 *(48·3 × 8·3 × 4·3)*
Gun: 1—20 mm
Main engine: 1 Werkspoor diesel; 1 800 hp = 15 knots
Complement: 22

Improved *Uisko* design. Ordered 21 February 1962, launched 25 March 1963.

SILMÄ *1975, Finnish Navy*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
UISKO	—	Valmet, Helsinki	1959

Displacement, tons: 370
Dimensions, feet (metres): 141 × 24 × 12·8 *(43 × 7·3 × 3·9)*
Gun: 1—20 mm
Main engine: 1 Werkspoor diesel; 1 800 hp = 15 knots
Complement: 21

Launched in 1958.

UISKO *1975, Finnish Navy*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
VIIMA	—	Laivateollisuus, Turku	1964

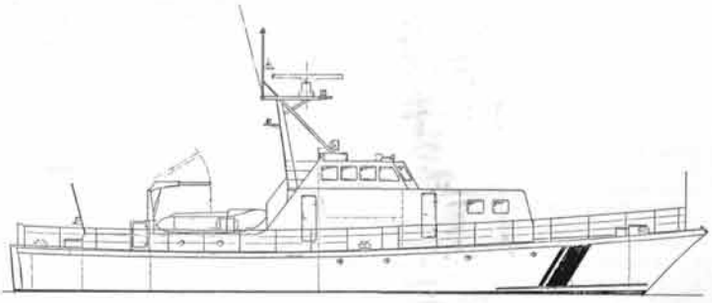
Displacement, tons: 135
Dimensions, feet (metres): 118·1 × 21·7 × 7·5 *(36 × 6·6 × 2·3)*
Gun: 1—20 mm
Main engines: 3 Mercedes-Benz diesels; 4 050 bhp = 25 knots
Complement: 13

Launched 20 July 1964.

1 + ? NEW CONSTRUCTION (COASTAL PATROL CRAFT)

Displacement, tonnes: 50
Dimensions, feet (metres): 87·9 × 17·1 × 8·5 *(26·8 × 5·2 × 2·6)*
Main engines: 2 MTU 8V 396 TC83 diesels; 1 990 shp
Complement: 8

Under a contract signed on 12 May 1980 Oy Laivateollisuus Ab (Valmet) is building this prototype craft, the class to replace the "Koskelo" class. Built in light metal alloy with a V-shaped hull.



VALMET Frontier Guard Craft *1980, Valmet*

8 "TELKKA/KOSKELO" CLASS (COASTAL PATROL CRAFT)

KAAKKURI*	**KOSKELO***	**KUIKKA***	**TAVI***
KIISLA*	**KUOVI***	**KURKI***	**TELKKA**

(*"Koskelo" class)

Displacement, tons: 92 *(Telkka)*; 95 *(Koskelo)* full load
Dimensions, feet (metres): 95·1 × 16·4 × 4·9 *(29 × 5 × 1·5)*
Gun: 1—20 mm (see notes)
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 shafts; 2 700 bhp = 23 knots (modified).
Complement: 9 *(Telkka)*, 11 *(Koskelo)*

Built of steel. Between 1955 *(Koskelo)* and 1960 *(Tavi)*. Originally of much lower horsepower. *Telkka* modernised in 1970 and "Koskelo" class in 1972-74 by Laivateollisuus. New internal arrangements, new decking and new engines increasing their speed by 8 knots. Can all mount a 40 mm on quarter-deck. *Telkka* to be modified for use as training vessel.

5 COASTAL PATROL CRAFT

RV 37-41

Dimensions, feet (metres): 46·9 × 11·8 × 5·2 *(14·3 × 3·6 × 1·6)*
Main engine: 1 Mercedes-Benz diesel; 1 shaft; 1 300 bhp = 12 knots

Built by Hollming Oy, Rauma. Two completed January 1978 and the third 1 September 1978. For patrol, towing and salvage.

COASTAL PATROL CRAFT

Class	*No.*	*Tonnage*	*Speed*	*Commissioned*
"RV 1" (ex RV 41)	1	17	10	1965
"RV 4"	4 & 5	12	9	1951
"RV 8"	8	10	10	1958
"RV 9"	9-17	12	10	1959-60
"RV 10"	18-28	18	10	1961-63
"RV 30"	30-36	19	10	1973-74
"RV 37"	37-39	20	10	1978

RV 38 *1978, Finnish Navy*

FRANCE

Ministerial

Minister of Defence:
M Joel Le Theule

Headquarters' Appointments

Conseil Supérieur de la Marine:
Amiraux Lannuzel, de Gaulle
Vice-Amiraux d'Escadre Accary, de Bigault de Cazanove, Piéri, de Castelbajac
Vice-Amiral Chabot

Senior Appointments

Préfet Maritime de la Première Région (PREMAR UN):
Contre-Amiral Crouzat
C in C Atlantic Theatre (CECLANT) and Préfet Maritime de la Deuxième Région (PREMAR DEUX):
Vice-Amiral d'Escadre de Bigault de Cazanove
C in C Mediterranean Theatre (CECMED) and Préfet Maritime de la Troisième Région (PREMAR TROIS):
Vice-Amiral d'Escadre Accary
C in C French Naval Forces, Pacific:
Amiral Choupin
C in C Atlantic Fleet:
Contre-Amiral Gagliardi
C in C Mediterranean Fleet:
Vice-Amiral Lacoste
C in C Indian Ocean:
Contre-Amiral Lejeune
C in C Force Océan Strategique:
Vice-Amiral d'Escadre Piéri
Flag Officer (Submarines):
Contre-Amiral Lavollé
Flag Officer (Embarked Air):
Contre-Amiral Montpellier
Flag Officer (Maritime Patrol Air):
Contre-Amiral Ghesquières

Diplomatic Representation

Naval Attaché in Algiers:
Capitaine de Frégate Trabut Cussac
Naval Attaché in Athens:
Capitaine de Frégate Bernardin
Naval Attaché in Bonn:
Capitaine de Frégate Potier
Naval Attaché in Brasilia:
Capitaine de Corvette Debedde
Naval Attaché in Cairo:
Capitaine de Frégate Then
Naval Attaché in the Hague:
Capitaine de Vaisseau Stoeber
Naval Attaché in Lisbon:
Capitaine de Frégate Clisson
Naval Attaché in London (& Defence Attaché):
Contre-Amiral Mosneron-Dupin
Naval Attaché in Madrid:
Capitaine de Vaisseau Materre
Naval Attaché in Moscow:
Capitaine de Vaisseau Riesacher
Naval Attaché in Nairobi:
Capitaine de Frégate Baratte
Naval Attaché in Oslo:
Capitaine de Vaisseau Euzen
Naval Attaché in Rome:
Capitaine de Vaisseau Cousturié
Naval Attaché in Santiago:
Capitaine de Frégate Eliés
Naval Attaché in Tokyo:
Capitaine de Vaisseau Gayno
Naval Attaché in Washington:
Contre-Amiral Le Cloérec
Naval Attaché in Wellington:
Capitaine de Frégate Waymel

Personnel

(a) 1981: 69 130 (4 230 officers, 27 750 petty officers, 18 850 long service ratings, 18 300 national service ratings)
Note: Surface ships and support—2 500 officers and 46 500 petty officers and ratings.
Submarines—450 officers and 3 500 petty officers and ratings.
Naval Air—850 officers and 8 300 petty officers and ratings.

(b) 12 months' national service

Bases

Cherbourg: Channel Fleet base. Prémar Un
Brest: Main Atlantic base. SSBN base. Prémar Deux
Lorient: Atlantic submarine base
Toulon: Main Mediterranean Fleet base. Prémar Trois

Fleet Dispositions (not including refits)

Mediterranean Fleet: *Colbert* (Flag), 2 aircraft carriers, 12 submarines, 6 destroyers, 7 frigates, 4 large patrol craft, 6 MCM vessels, 3 survey ships, 4 support ships
Atlantic Fleet: 11 destroyers, 4 frigates, 4 SSBNs, 6 submarines, 1 tanker
Indian Ocean: *La Charente* (Flag), 1 destroyer, 4 frigates, 5 patrol craft, 3 support ships
West Indies: 2 ships
Training Squadron: *Jeanne d'Arc, Doudar de Lagree*
Pacific: 3 frigates, 1 LSD, 4 LSTs, 1 FAC (M), 1 tug

Strength of the Fleet

Type	*Active (Reserve)*	*Building or (Projected)*
Submarines (Strat Missile)	5 1 (Diesel powered)	1
Submarines (Fleet)	1	3
Submarines (Patrol)	20	—
Attack Carriers	2	(2)
Helicopter Carrier	1	—
Cruiser	1	—
Destroyers	19	5 (5)
Frigates	21	7 (1)
Public Service Force	1	2 (9)
Fast Attack Craft (Missile)	5	2 (6)
Large Patrol Craft	11	—
Coastal Patrol Craft	1	—
LPDs	2	—
LSTs	5	—
LCTs	14	2 (2)
LCMs	31	—
Minesweepers (Coastal)	17	—
Minehunters	16	7 (2)
Surveying Ships	5	(1)
Coastal Survey Ships	3	—
Inshore Survey Craft	1	—
Tankers (URs)	4	1 (1)
Tankers (Support)	3	—
Maintenance Ship	1	—
Depot Ships	5	—
Trials Ships	11	—
Boom Defence Vessels	9	—
Torpedo Recovery Vessels	3	—
Supply Tenders	6	—
Small Transports	14	—
Tenders	16	(2)
Tugs	91	—
Training Ships	8	4 (4)
Gendarmerie Maritime	12	—

Naval Air Stations

St. Raphael, Lann Bihoue, Nimes Garon, Lanveox Poulmic, Dax, Aspretto, Landvisiau, Hyères, St. Mandrier.

Shipyards (Naval)

Cherbourg: Submarines and Fast Attack Craft
Brest: Major warships and refitting
Lorient: Destroyers and Frigates

Submarine Service

Known as Force Océanique Stratégique (FOST) with headquarters at Houilles near Paris. SSBN *(SNLE)* force based at Ile Longue Brest with a training base at Roche-Douvres and VLFW/T station at Rosnay. Patrol submarines are based at Lorient and Toulon. Plans for nuclear fleet submarines are included in the 15-year plan, with the first being laid down in 1976 and the second in 1978.

1978-82 New Construction Plan

1978 Estimates: 1 C 70 (ASW) (No 4), 1 C 70 (A/A) (No 1), 1 SSN (No 2), 1 AOE (No 3), 2 MHC (Nos 2 and 3)
1979 Estimates: 1 SNLE (No 6), 1 C 70 (A/A) (No 2), 1 A 69 (No 15), 1 SSN (No 3), 2 MHC (Nos 4 and 5)
1980 Estimates: 1 C 70 (ASW) (No 5), 2 A 69 (Nos 16 and 17), 2 LST (Batrals Nos 3 and 4), 2 MHC (Nos 6 and 7), 4 Training Vessels (Nos 1-4)
1981 Estimates: 1 SSN (No 4), 1 C 70 (ASW) (No 6), 1 MHC (No 8), 2 LPC (Super Patra 1 and 2), 1 AOE (No 4), 4 Training Vessels (Nos 5-8), 1 AGS (No 2), 2 FSMC ships
On 1 January 1981 all ships up to 1980 estimates (inclusive) were built or building.

Planned Naval Strength for 2000

6 SNLE
10 SSN
4 SS
2 aircraft carriers (nuclear)
1 helicopter carrier
18 "corvettes anti-soumarin"
9 "corvettes anti-aerienne"
18 "avisos"
10 "patrouilleurs"
40 "drageurs et chasseurs de mine"
3 "transports de chalaud debarquement"
6 "batiments de transport (BATRAL)"
6 "batiments de soutien logistique"
2 "batiments ateliers polyvalents"
3 ocean tugs
4 fleet replenishment ships
56 helicopters (light)
18 helicopters (heavy)
80 embarked FW aircraft
40 LRMP aircraft
11 Public Service Force

1980-90 Deletion Plan

16 Diesel submarines
5 AA Ships
8 ASW Ships
12 Avisos
23 Patrol Craft
19 MCM Ships

Dates

As well as the usual dates of "Laid Down" (sur cale), "Launched" (lancement) and "Commissioned" (en service) other dates may be quoted in the text—"Trials" (essais) and "Preliminary Cruise" (cloture d'armement) which precedes the actual commissioning.

Mercantile Marine

Lloyd's Register of Shipping:
1 241 vessels of 11 924 557 tons gross

DELETIONS

Submarines
1979 *Aréthuse*
1980 *Ariane, Amazone*

Destroyers
1975 *Chevalier Paul*
1976 *Cassard, Guichen*
1977 *Jaureguiberry, La Bourdonnais*
1980 *Tartu*
1981 *Forbin*

Frigates
1975 *Le Bordelais, Le Brestois, Le Champenois, Le Corse*
1976 *Aventure, Le Bourguignon, Le Lorrain*
1977 *Le Boulonnais, Le Gascon*
1979 *Le Béarnais, Le Picard*
1980 *Le Savoyard, Le Basque, Le Normand, Le Provençal*

Light Forces
1975 *L'Agile, Le Fougeux, L'Opiniatre*
1976 *La Bayonnaise,* P 753
1977 *Le Frondeur, Le Hardi, L'Intrepide*
1978 *L'Attentif, L'Effronté, L'Enjoué, L'Etourdi, Oiseau des Iles, La Malouine,* Y 760
1979 *L'Alerte, L'Adroit, Croix du Sud* (to Seychelles), *Vega*
1980 *Aldebaran, Sagittaire, L'Ardent*

Mine Warfare Forces
1975 *Bellatrix, Dénébola, Pégase; Gardenia, Liseron* and *Magnolia* reclassified as diving base ships, *Jacinthe* as minelayer
1977 *Bleuet* and *Chrysanthème* (deleted for spares); *Algol, Cassiopée, Giroflée*
1978 *Autan, Colmar; Marjolaine* (to Tunisia). *Antares*
1980 *Pervenche, Camélia, Laurier*

Amphibious Forces
1975 LCT 9061 (to Comoro Islands)
1976 LCT 9071, 9081

Survey Ships
1975 *La Découverte* (as target)
1977 *Alidade, La Pérouse*

BDVs
1976 *Persistante, Victorieuse*
1977 *Araignée, Commandant Robert Giraud*
1978 *Libellule*
1980 *Luciole*

Service Forces
1975 *Maurienne* (Fleet Support Ship), *Cataracte* (Water Carrier), *Belouga* (Tender)
1976 *La Seine* (Tanker), *Déluge, Mirage* (Water Carriers), *Trébéron* (Transport)
1977 *Fontaine* (Water Carrier), *Falleron* (Transport)
1978 *Moselle* (Maintenance Ship)
1979 *Issole* (Transport)
1980 *La Saône* (Tanker), *Lac Tonlé Sap, Sahel* (Support Tankers), *Saintonge* (VSS), *Petrel* (TRV), *Lutin* (Transport), *Armoise* (Tender), *Archimède* (DSV)

Tugs
1975 *Charaa, Hippocampe, Kasserine, Pont de Fahs, Poulpé, Rascasse, Rossignol*
1976 *Anfa, Belier, Canari, Coolie, Gillies, Grive, Hanneton, Hirondelle, Moule, Oursin*
1977 *Délange, Fontaine, Forméne, Giens, Infatigable, Jean Claude, Jonque, Marronier, Murène, Ondée, Tupa*
1978 *Bambou, Haut Barr*
1980 *Elephant, Rhinoceros, Goliath*

PENNANT LIST

Submarines

S 601 Rubis
S 602 —
S 603 —
S 610 Le Foudroyant
S 611 Le Redoutable
S 612 Le Terrible
S 613 L'Indomptable
S 614 Le Tonnant
S 620 Agosta
S 621 Bévéziers
S 622 La Praya
S 623 Ouessant
S 631 Narval
S 632 Marsouin
S 633 Dauphin
S 634 Requin
S 636 Argonaute
S 637 Espadon
S 638 Morse
S 641 Daphné
S 642 Diane
S 643 Doris
S 645 Flore
S 646 Galatée
S 648 Junon
S 649 Vénus
S 650 Psyché
S 651 Sirène
S 655 Gymnote

Aircraft and Helicopter Carriers

R 97 Jeanne d'Arc
R 98 Clemenceau
R 99 Foch

Cruiser

C 611 Colbert

Destroyers

D 602 Suffren
D 603 Duquesne
D 609 Aconit
D 610 Tourville
D 611 Duguay-Trouin
D 612 De Grasse
D 622 Kersaint
D 624 Bouvet
D 625 Dupetit Thouars
D 627 Maillé Brézé
D 628 Vauquelin
D 629 D'Estrées
D 630 Du Chayla
D 631 Casabianca
D 632 Guépratte
D 633 Duperré
D 638 La Galissonnière
D 640 Georges Leygues
D 641 Dupleix
D 642 Montcalm
D 643 —

Frigates and Corvettes

F 725 Victor Schoelcher
F 726 Commandant Bory
F 727 Amiral Charner
F 728 Doudart de Lagrée
F 729 Balny
F 733 Commandant Rivière
F 740 Commandant Bourdais
F 748 Protet
F 749 Enseigne de Vaisseau Henry
F 776 L'Alsacien
F 778 Le Vendéen
F 781 D'Estienne d'Orves
F 782 Amyot d'Inville
F 783 Drogou
F 784 Detroyat
F 785 Jean Moulin
F 786 Quartier Maitre Anquetil
F 787 Commandant de Pimodan
F 788 Seconde Maitre Le Bihan
F 789 Lieutenant de Vaisseau le Henaff
F 790 Lieutenant de Vaisseau Lavallée
F 791 Commandant l'Herminier
F 792 Premier Maitre l'Her
F 793 Commandant Blaison
F 794 Enseigne de Vaisseau Jacoubet
F 795 —
F 796 —
F 797 —

Mine Warfare Forces

M 610 Ouistreham
M 612 Alençon
M 613 Berneval
M 615 Cantho
M 616 Dompaire
M 617 Garigliano
M 618 Mytho
M 619 Vinh Long
M 620 Berlaimont
M 623 Baccarat
M 633 Pivoine
M 635 Réséda
M 638 Acacia
M 639 Acanthe
M 668 Azalée
M 674 Cyclamen
M 675 Eglantine
M 679 Glycine
M 682 Lilas
M 684 Lobelia
M 687 Mimosa
M 688 Muguet
M 712 Cybèle
M 713 Calliope
M 714 Clio
M 715 Circé
M 716 Cérès
M 737 Capricorne
M 749 Phénix
M 755 Capella
M 756 Céphée
M 757 Verseau

Light Forces

P 640 Le Fringant
P 650 Arcturus
P 652 La Lorientaise
P 653 La Dunkerquoise
P 655 La Dieppoise
P 656 Altair
P 657 La Paimpolaise
P 659 Canopus
P 660 Etoile Polaire
P 661 Jasmin G.M.
P 662 Pétunia
P 670 Trident
P 671 Glaive
P 672 Epée
P 673 Pertuisane
P 680 Sterne
P 730 La Combattante
P 759 Lyre
P 765 Mercure
P 770 PB G.M.
P 772 PB G.M.
P 774 PB G.M.
P 778 PB G.M.
P 779 PB G.M.
P 780 Karukera G.M.
P 781 Guyane G.M.
P 784 Géranium G.M.
P 787 Jonquille G.M.
P 788 Violette G.M.
P 789 Paquerette G.M.

Amphibious Forces

L 9003 Argens
L 9004 Bidassoa
L 9007 Trieux
L 9008 Dives
L 9009 Blavet
L 9021 Ouragan
L 9022 Orage
L 9030 Champlain
L 9031 Francis Garnier
L 9070 LCT
L 9072 LCT
L 9073 LCT
L 9074 LCT
L 9082 LCT
L 9083 LCT
L 9084 LCT
L 9091 LCT
L 9092 LCT
L 9093 LCT
L 9094 LCT
L 9096 LCT

Auxiliaries Survey and Support Ships

A 603 Henry Poincaré
A 607 Meuse
A 610 Ile d'Oléron
A 615 Loire
A 617 Garonne
A 618 Rance
A 619 Aber Wrach
A 620 Jules Verne
A 621 Rhin
A 622 Rhône
A 625 Papenoo
A 626 La Charente
A 629 Durance
A 632 Punaruu
A 640 Origny
A 643 Aunis
A 644 Berry
A 646 Triton
A 649 L'Etoile
A 650 La Belle Poule
A 652 Mutin
A 653 La Grande Hermine
A 660 Hippopotame
A 664 Malabar
A 667 Hercule
A 669 Ténace
A 671 Le Fort
A 672 Utile
A 673 Lutteur
A 674 Centaure
A 675 Isère
A 680 Jacinthe
A 683 Octant
A 685 Robuste
A 686 Actif
A 687 Laborieux
A 688 Valeureux
A 692 Travailleur
A 693 Acharné
A 694 Efficace
A 695 Bélier
A 696 Buffle
A 697 Bison
A 699 Pélican
A 701 Ajonc
A 702 Girelle
A 706 Courageux
A 710 Myosotis
A 712 Athos
A 713 Aramis
A 714 Tourmaline
A 722 Poséidon
A 723 Liseron
A 731 Tianée
A 735 Hibiscus
A 736 Dahlia
A 737 Tulipe
A 738 Capucine
A 739 Oeillet
A 740 Hortensia
A 741 Armoise
A 743 Denti
A 747 Bételgeuse
A 756 Espérance
A 757 D'Entrecasteaux
A 758 La Recherche
A 759 Gustave Zédé
A 760 Cigale
A 761 Criquet
A 762 Fourmi
A 763 Grillon
A 764 Scarabée
A 766 Estafette
A 767 Chamois
A 768 Elan
A 769 Narvik
A 770 Magnolia
A 771 Gardénia
A 772 Engageante
A 773 Vigilante
A 774 Chevreuil
A 775 Gazelle
A 776 Isard
A 780 L'Astrolabe
A 781 Boussole
A 784 L'Agénais
A 789 L'Archéonaute
A 794 Corail

Auxiliaries

CHA 1 etc. LCUs
GFA 1-5 Floating Cranes
Y 601 Acajou
Y 602 Aigrette
Y 604 Ariel
Y 607 Balsa
Y 611 Bengali
Y 612 Bouleau
Y 613 Faune
Y 617 Mouette
Y 618 Cascade
Y 620 Châtaigner
Y 621 Mésange
Y 623 Charme
Y 624 Chêne
Y 625 Cigogne
Y 628 Colibri
Y 629 Cormier
Y 630 Bonite
Y 632 Cygne
Y 634 Rouget
Y 635 Equeurdreville
Y 636 Martinet
Y 637 Fauvette
Y 638 Maronnier
Y 643 Tourterelle
Y 644 Frêne
Y 645 Gave
Y 646 Geyser
Y 648 Goéland
Y 653 Héron
Y 654 Hêtre
Y 655 Hévéa
Y 661 Korrigan
Y 662 Dryade
Y 663 Latanier
Y 666 Manguier
Y 667 Tupa
Y 668 Méléze
Y 669 Merisier
Y 670 Merle
Y 671 Morgane
Y 673 Moineau
Y 675 Martin Pêcheur
Y 680 Murène
Y 682 Okoume
Y 684 Oued
Y 686 Palétuvier
Y 687 Passereau
Y 688 Peuplier
Y 689 Pin
Y 690 Pingouin
Y 691 Pinson
Y 694 Pivert
Y 695 Platane
Y 696 Alphée
Y 698 Calmar
Y 700 Néréide
Y 701 Ondine
Y 702 Naïade
Y 704 Sycomore
Y 706 Chimère
Y 708 Saule
Y 710 Sylphe
Y 711 Farfadet
Y 717 Ébène
Y 718 Erable
Y 719 Olivier
Y 720 Santal
Y 721 Alouette
Y 722 Vauneau
Y 723 Engoulevent
Y 724 Sarcelle
Y 725 Marabout
Y 726 Toucan
Y 727 Macreuse
Y 728 Grand Duc
Y 729 Eider
Y 730 Ara
Y 732 DGV
Y 735 Merlin
Y 736 Mélusine
Y 738 Maronnier
Y 739 Noyer
Y 740 Papayer
Y 741 Elfe
Y 743 Palangrin
Y 745 Aiguière
Y 746 Embrun
Y 747 Loriot
Y 748 Gélinotte
Y 749 La Prudente
Y 750 La Persévérante
Y 751 La Fidèle

G.M. = Gendarmerie Maritime

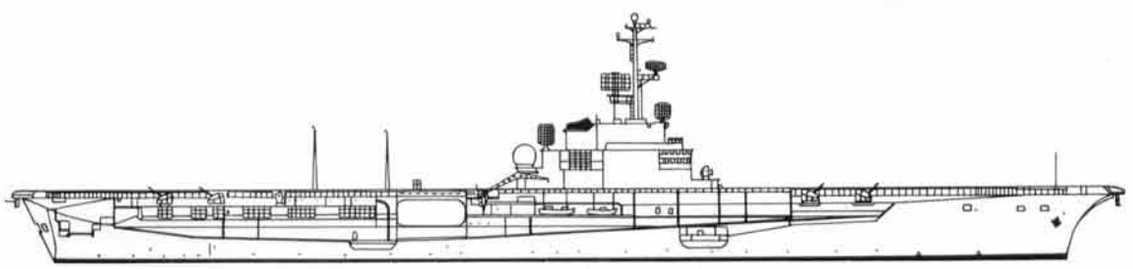
NAVAL AIR ARM

Notes: (a) On 1 January 1979 Squadron 11F received the first 17 Super Etendard in place of Etendard IV M. During 1979 Squadron 14F was supplied with Super Etendard in place of Crusader F8E which were transferred to Squadron 12F. The eventual total of Super Etendards will be 80, all equipped to launch AN52 nuclear weapons.
(b) 71 Super Etendard delivered by 1981.
(c) A total of 36 Lynx helicopters (with 4 more planned) has been delivered or is on order. These will be for ship, SAR, communications and training.
(d) Alizés are being modernised to last the lifetime of *Clemenceau* and *Foch*.
(e) All BR1150 Atlantiques and Neptune P2H are to be replaced by Atlantique N.G. (total 42) from 1984.

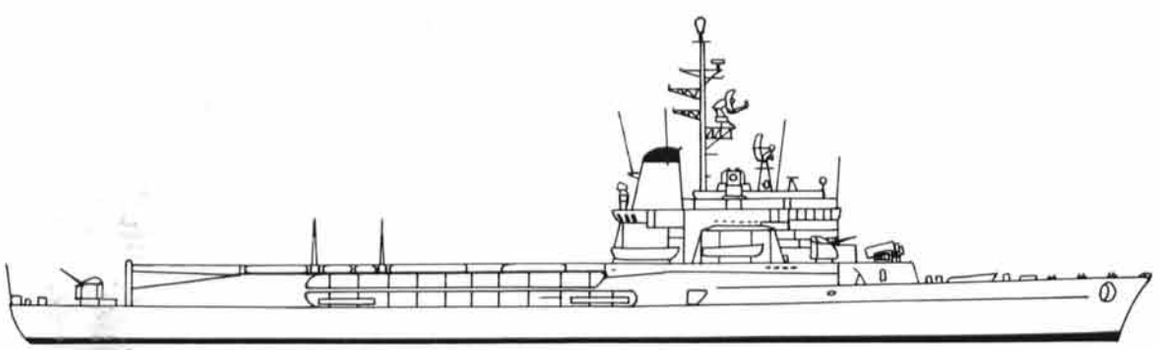
NAVAL AIR ARM

Squadron Number	*Base*	*Aircraft*	*Task*
Embarked Squadrons			
4F	Lann Bihoue	BR1050 "Alize"	Patrol & A/S
6F	Nimes Garons	BR1050 "Alize"	Patrol & A/S
11F	Landivisiau	Super Etendard	Strike Fighter
12F	Landivisiau	F8E "Crusader"	Interceptors
14F	Landivisiau	Super Etendard	Strike Fighter
16F	Landivisiau	Etendard IV P/M	Reconnaissance
17F	Hyeres	Super Etendard	Strike Fighter
31F	St. Mandrier	Lynx	A/S
32F	Lanveoc Poulmic	Super-Frelon	A/S
33F	St. Mandrier	Super-Frelon	Assault
34F	Lanveoc	Lynx	A/S
35F	*J. d'Arc* or Lanveoc	Lynx	Training
Support Squadrons			
2S	Lann Bihoue	Navajo, Nord 262	Support 1st & 2nd Region
3S	Hyères	Navajo, Nord 262	Support 3rd Region
SES	St. Raphael	Nord 2504, BR1050 Navajo	Trials CEPA
20S	St. Raphael	AL II, AL III AL III ASM HSS 1, Super Frelon	Trials CEPA
22S	Lanveoc Poulmic	AL II, AL III AL III VSV	Support 2nd Region, SAR
23S	St. Mandrier	AL II, AL III	Support 3rd Region, SAR
SSD	Dugny	C 54, Nord 262 Navajo	Support
SRL	Landvisiau	Falcon, MS 760	Support

Squadron Number	*Base*	*Aircraft*	*Task*
Maritime Patrol Squadrons			
21F	Nimes Garons	BR 1150 "Atlantic"	MP
22F	Nimes Garons	BR 1150 "Atlantic"	MP
23F	Lann Bihoue	BR 1150 "Atlantic"	MP
24F	Lann Bihoue	BR 1150 "Atlantic"	MP
25F	Lann Bihoue	Neptune P2H	MP
Training Squadrons			
55S	Aspretto	Nord 262	Twin-engine conversion
56S	Nimes Garons	C 47	Flying School
59S	Hyeres	ET IV, BR 1050 CM 175 "Zephyr"	Fighter School
SVS	Lanveoc Poulmic	MS 880	Naval School Recreational
Esalat Dax	Dax	AL II	Helicopter School
SIV	St Raphael	MS 880	Flying School
Overseas Detachments			
9S	Tontouta	C 54, C 47, Neptune P2H	Support and Liaison
12S	Papeete	Neptune P2H	MP
SECTHELPAC	Papeete	AL III	Support



"CLEMENCEAU" Class *(Scale 1 : 1 800)*



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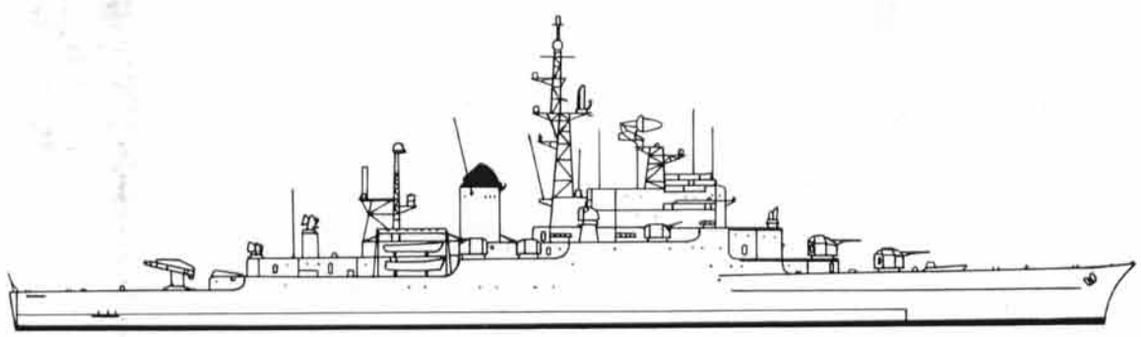

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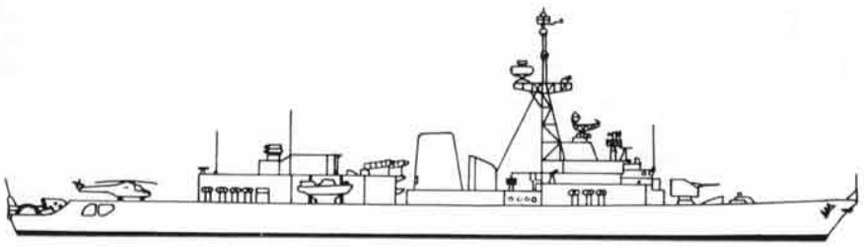

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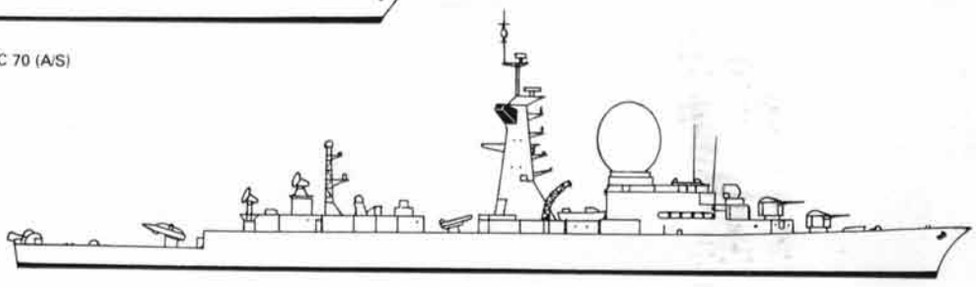

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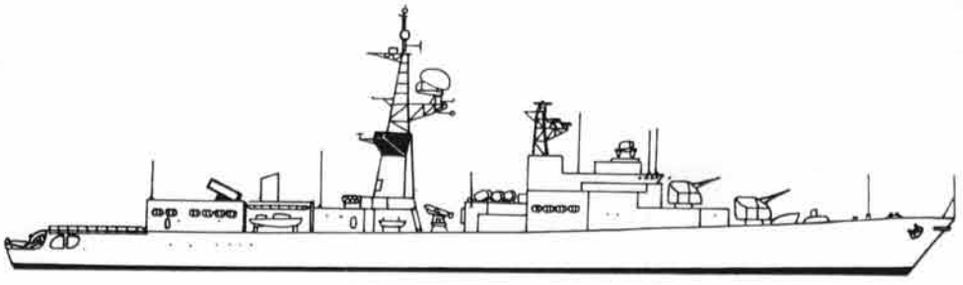

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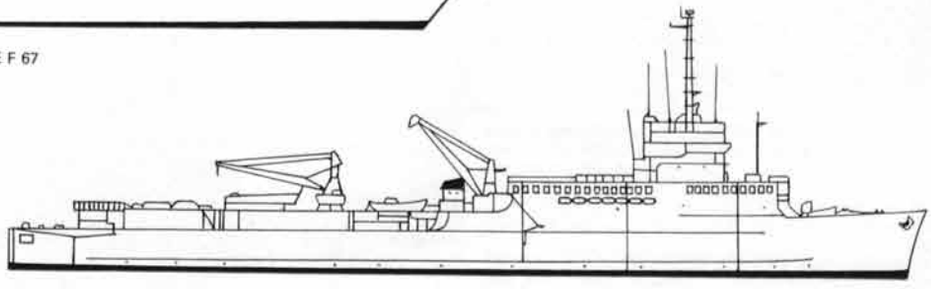

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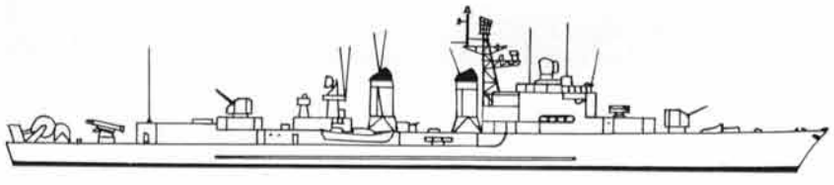

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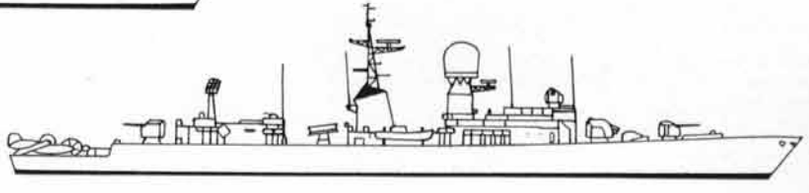

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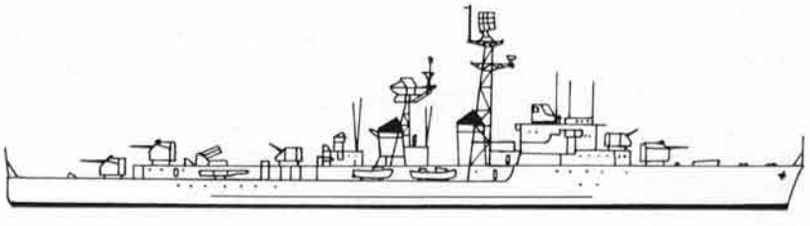

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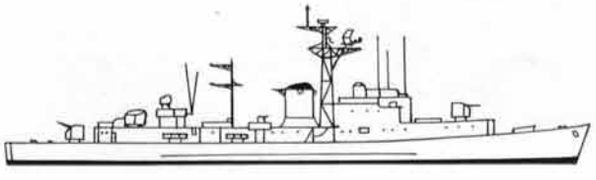


TYPE E 52B

TYPE A 69

SUBMARINES

Note: There may be two more of the "L'Inflexible" class to be completed in 1988-92 and two or three of an improved class after that. Missiles of 3 800 n. miles range are mentioned for the latter class. There is no official confirmation of this information and no financial allowance has yet been made.

1 NUCLEAR POWERED BALLISTIC MISSILE TYPE (SNLE)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Trials*	*Operational*
L'INFLEXIBLE	—	Cherbourg Naval Dockyard	27 Mar 1980	mid-1982	early 1984	early 1985

In September 1978 a decision was taken by President Giscard D'Estaing to proceed with the construction of a sixth SNLE to be of an intermediate type between her predecessors and a new class planned for 1990-2000. Her cost will be about 2 milliard francs. The reasoning behind this order is that in order to have three submarines continuously available, of which two are on patrol, six hulls are required. If the ordering of this boat had not been delayed in December 1975 she would have been built with the M-20 missile system instead of the M4 system which will be operational in 1985. Having accepted the fact that France would need six, if not seven, SNLE operational by 2000 the logic of having the most up-to-date missile system is clear. The M-4 with a range of some 2 500-3 000 miles and carrying six 150 kt MIRV heads will combine with improved inertial navigation systems, sonar, diving depth, reactor and armament to provide a submarine "qui utilisera les techniques des années 80" as M. Bourges (late Minister of Defence) described it.

5 NUCLEAR POWERED BALLISTIC MISSILE TYPE (SNLEs)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Trials*	*Operational*
LE FOUDROYANT	S 610	Cherbourg Naval Dockyard	12 Dec 1969	4 Dec 1971	May 1973	6 June 1974
LE REDOUTABLE	S 611	Cherbourg Naval Dockyard	30 Mar 1964	29 Mar 1967	July 1969	1 Dec 1971
LE TERRIBLE	S 612	Cherbourg Naval Dockyard	24 June 1967	12 Dec 1969	1971	1 Dec 1973
L'INDOMPTABLE	S 613	Cherbourg Naval Dockyard	4 Dec 1971	17 Aug 1974	Dec 1975	31 Dec 1976
LE TONNANT	S 614	Cherbourg Naval Dockyard	Oct 1974	17 Sep 1977	Apr 1979	3 Apr 1980

Displacement, tons: 8 045 surfaced; 8 940 dived
Dimensions, feet (metres): 422·1 × 34·8 × 32·8 *(128·7 × 10·6 × 10)*
Missiles: 16 tubes amidships for MSBS M-20
Torpedo tubes: 4—21 in *(533 mm)* (18 torpedoes)
Nuclear reactor: 1 pressurised water-cooled
Main machinery: 2 steam turbines; 2 turbo-alternators; 1 electric motor; 16 000 hp; 1 shaft
Auxiliary propulsion: Twin diesel; 1 306 hp; fuel for 5 000 miles
Speed, knots: 20+ surfaced; 25 dived
Complement: 2 alternating crews each of 135 (15 officers, 120 men)
Diving depth: Over 900 ft *(300 m)*

Le Redoutable was the first French nuclear-powered, ballistic missile armed submarine and the prototype of the *"Force de Dissuasion"*. The decision to build a fourth unit of this class was announced on 7 December 1967, the fifth in February 1972 and the sixth on 30 April 1974 (see *L'Inflexible* above).
The plan from 1980 is to have four boats operational and one in refit.
Le Tonnant carried out test firing of M-20 in July 1979—the tenth launch of this missile, all being successful. This submarine sailed on her first patrol 3 May 1980.

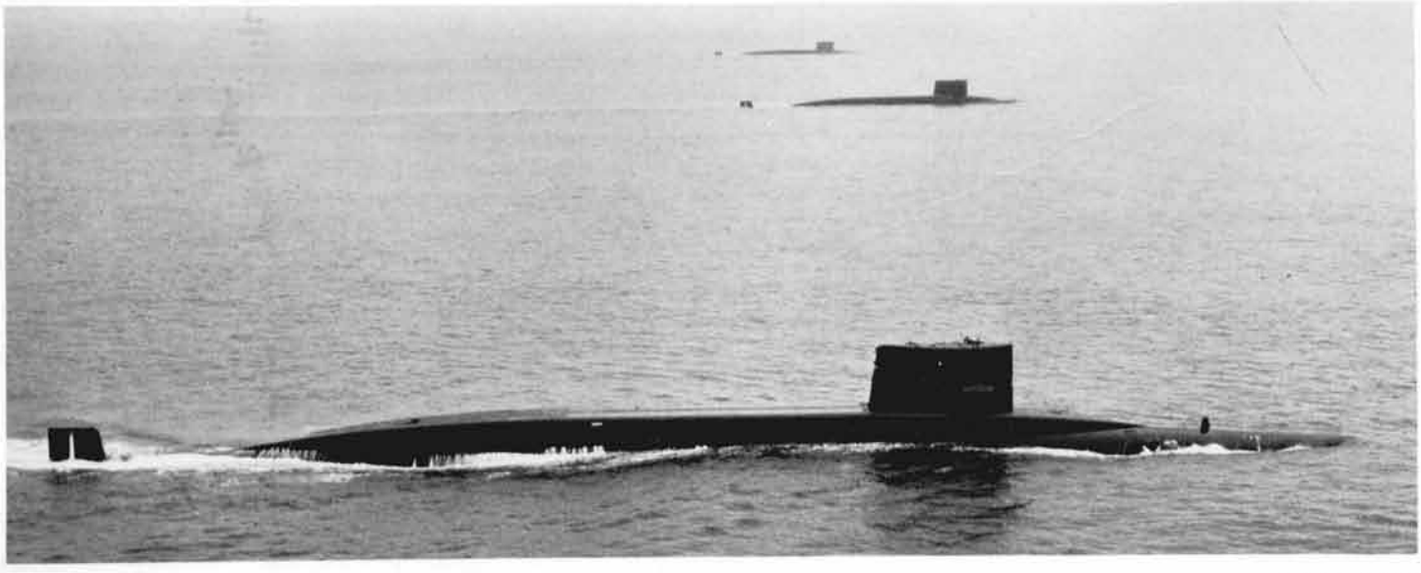
Missiles: Originally armed with MSBS M-1 of 18 tons launch weight. Subsequently MSBS M-2 of 19·9 tons with a 1 300 n. mile range and a 500 kt head was shipped, the first submarine with this outfit being *Le Redoutable* at her 1976 refit. The 1 500 n. mile M-20 missiles with a megaton reinforced head have now been shipped in *Le Terrible* and *L'Indomptable*, and are being fitted in *Le Foudroyant*, *Le Tonnant* and in *Le Redoutable*.
All submarines except *Le Redoutable* will be fitted with M-4 missiles—*Le Tonnant* 1987; *L'Indomptable* late 1988; *Le Terrible* late 1989; *Le Foudroyant* late 1990.
SM39 may be carried in SNLEs in due course.

Radar: *Le Redoutable* is equipped with Calypso I Band radar for navigation and attack. Has passive ECM and DF systems.

Reactor: The reactor is a natural-water-cooled type running on enriched uranium, feeding twin turbines and two turbo-alternators.

Sonar: One DUUV 23 panoramic (to be replaced by multi-purpose DSUX 21).
One DUUX 2 ranging.

LE REDOUTABLE *1975, French Navy*



LE REDOUTABLE, LE TERRIBLE, LE FOUDROYANT *1973, French Navy*

1 EXPERIMENTAL MISSILE TYPE

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
GYMNOTE	S 655	Cherbourg Naval Dockyard	17 Mar 1963 (see *Hull* Note)	17 Mar 1964	17 Oct 1966

Displacement, tons: 3 000 surfaced; 3 250 dived
Dimensions, feet (metres): 275·6 × 34·7 × 25 *(84 × 10·6 × 7·6)*
Missile launchers: 2 tubes for MSBS
Main machinery: 4 sets 620 kW diesel-electric; 2 electric motors; 2 shafts; 2 600 hp
Speed, knots: 11 surfaced; 10 dived
Complement: 78 (8 officers, 70 men)

An experimental submarine for testing ballistic missiles for the French nuclear-powered SSBNs, and for use as an underwater laboratory to prove equipment and arms for nuclear-powered submarines.
Started conversion in early 1977 (completion January 1979) for trial firings of M-4 missiles. First M-4 trials from land November 1980. Further refit in 1980 to prepare for new M-4 trials in 1981.

Hull: *Gymnote* was the hull laid down in 1958 as the nuclear-powered submarine Q 244 which was cancelled in 1959. The hull was still available when a trials vessel for the French MSBS type missiles was required and was completed as *Gymnote*. Has fixed bow-planes.

GYMNOTE *1970, French Navy*

FLEET SUBMARINES

1 + 3 TYPE SNA 72

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
RUBIS	S 601	Cherbourg Naval Dockyard	10 Dec 1976	7 July 1979	1982
—	S 602	Cherbourg Naval Dockyard	1978	—	1984
—	S 603	Cherbourg Naval Dockyard	1980	—	1985
—	S —	Cherbourg Naval Dockyard	—	—	—

Displacement, tons: 2 385 surfaced; 2 670 dived
Dimensions, feet (metres): 236·5 × 24·9 × 21 *(72·1 × 7·6 × 6·4)*
Torpedo tubes: 4—21 in *(533 mm)* (14 torpedoes or mines)
Missiles: Tube-launched SM 39 (see note)
Main machinery: 1 nuclear reactor; 48 MW; 2 turbo alternators; 1 main motor; 1 shaft with emergency electric motor
Speed, knots: 25
Complement: 66 (9 officers, 35 petty officers, 22 junior ratings)

A new class of fleet-submarines with the first included in the 1974 programme. The armament, sonar and fire control equipment are improved versions of those in the "Agosta" class. Four of this class are included in the 1977-82 building programme. The second of class ordered September 1976, the third in late 1979, the fourth and long-lead items for the fifth in 1981.

Rubis was named as *Provence* on 26 May 1979 but her launch was delayed by a strike until 7 July 1979 when she was launched without a bow section.

Diving depth: 980 ft *(300 m)*

Future: Two squadrons of these submarines are forecast, one to be stationed at Brest and the other at Toulon. *Rubis* will serve in Mediterranean.

Machinery: As this is the smallest class of SSNs ever designed except for the 400 ton NR-1 of the US Navy there has clearly been a great reduction in the size of the reactor compared with that of the "Le Redoutable" class.

Missiles: The SM 39, an adaptation of the MM 38 Exocet, will have a range of about 50 km. To be embarked in 1985.

Names: The first three were originally named *Provence, Bretagne* and *Bourgogne*. In December 1980 it was announced that the names of precious stones would be substituted. The class of minelaying submarines built at Toulon 1926-36 were called *Rubis, Diamant, Perle, Saphir* and *Turquoise* but pride of place has been given to *Rubis* who carried out 22 minelaying patrols under the Free French ensign 1940-45 (and also carried a famous dog as her mascot).

Preliminary cruise: *Rubis* (after preliminary trials beginning 12 January 1980), carried out preliminary cruise early 1981.

Sonar: One DSUV 22 (passive listening);
One DUUA 2B (active);
One DUUX 2 (passive ranging);
One TUUM 1 (UWT).

PATROL SUBMARINES

4 "AGOSTA" CLASS

Name	*No.*	*Builders*	*Laid down* (see note)	*Launched*	*Commissioned*
AGOSTA	S 620	Cherbourg Naval Dockyard	1 Nov 1972	19 Oct 1974	28 July 1977
BÉVÉZIERS	S 621	Cherbourg Naval Dockyard	17 May 1973	14 June 1975	27 Sep 1977
LA PRAYA	S 622	Cherbourg Naval Dockyard	1974	15 May 1976	9 Mar 1978
OUESSANT	S 623	Cherbourg Naval Dockyard	1974	23 Oct 1976	27 July 1978

Displacement, tons: 1 200 standard; 1 450 surfaced; 1 725 dived
Dimensions, feet (metres): 221·7 × 22·3 × 17·7 *(67·6 × 6·8 × 5·4)*
Torpedo tubes: 4—21 in *(533 mm)* (bow) (20 torpedoes)
Main machinery: Diesel-electric; 2 SEMT-Pielstick 16 PA4 diesels 3 600 hp; 1 main motor (3 500 kW) 4 600 hp; 1 cruising motor (23 kW); 1 shaft
Speed, knots: 12 surfaced; 20 dived
Range, miles: 8 500 at 9 knots (snorting); 350 at 3·5 knots (dived)
Endurance: 45 days
Complement: 52 (7 officers, 45 men)

Building of this class was announced in 1970 under the third five-year new construction plan 1971-75. Considerable efforts have been made to improve the silencing of this class, including a clean casing and the damping of internal noise.
All in the Mediterranean.

Laid down dates: Those given are for the placing of the first prefabricated section in the building dock. Prefabrication of *Agosta* started 7 February 1972 and of *Bévéziers* December 1972.

Radar: Possibly I Band Calypso Th D 1030 or 1031 for search/navigation.

Sonar: One DSUV 2 (passive with 36 microphones);
One DUUA 1 (active);
One DUUA 2 (active);
One DUUX 2 (passive ranging).

Trials: *Bévéziers* October 1976, *La Praya* April 1977, *Ouessant* October 1977.

Torpedo tubes: A new design allowing for torpedo discharge at all speeds and down to full diving depth. Rapid reloading fitted.
First patrol submarines to be fitted with 21-in *(533 mm)* tubes.

BÉVÉZIERS *1980, French Navy*

AGOSTA *1978, French Navy*

Foreign orders: Four being built at Cartagena for Spanish Navy and two built for Pakistan by Dubigeon.

9 "DAPHNÉ" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
DAPHNÉ	S 641	Dubigeon	Mar 1958	20 June 1959	1 June 1964
DIANE	S 642	Dubigeon	July 1958	4 Oct 1960	20 June 1964
DORIS	S 643	Cherbourg Naval Dockyard	Sep 1958	14 May 1960	26 Aug 1964
FLORE	S 645	Cherbourg Naval Dockyard	Sep 1958	21 Dec 1960	21 May 1964
GALATÉE	S 646	Cherbourg Naval Dockyard	Sep 1958	22 Sep 1961	25 July 1964
JUNON	S 648	Cherbourg Naval Dockyard	July 1961	11 May 1964	25 Feb 1966
VENUS	S 649	Cherbourg Naval Dockyard	Aug 1961	24 Sep 1964	1 Jan 1966
PSYCHÉ	S 650	Brest Naval Dockyard	May 1965	28 June 1967	1 July 1969
SIRÈNE	S 651	Brest Naval Dockyard	May 1965	28 June 1967	1 Mar 1970

Displacement, tons: 869 surfaced; 1 043 dived
Dimensions, feet (metres): 189·6 × 22·3 × 15·1 *(57·8 × 6·8 × 4·6)*
Torpedo tubes: 12—21·7 in *(550 mm)* 8 bow 4 stern
Main machinery: SEMT-Pielstick diesel-electric; 1 300 bhp diesels; 1 600 bhp motors; 2 shafts
Range, miles: 2 700 at 12·5 knots (surfaced); 4 500 at 5 knots (snorting); 3000 at 7 knots (snorting)
Speed, knots: 13·5 surfaced; 16 dived
Complement: 45 (6 officers, 39 men)

Improved "Aréthuse" class with diving depth about 1 000 ft *(300 m)*.

Diving depth: About 900 ft *(300 m)*

Radar: I Band Calypso II for search/navigation.

Sonar: One DSUV 2 (passive with 36 microphones);
One DUUA 1 (active);
One DUUA 2 (active);
One DUUX 2 (passive ranging).

Foreign orders: South Africa (1967) (3), Pakistan (1966) (3), (1 to Pakistan later), Portugal (1964) (4), Spain (built in Spain) (1965) (4).

VENUS *3/1979, Leo van Ginderen*

DIANE *7/1980, Leo van Ginderen*

1 "ARÉTHUSE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ARGONAUTE	S 636	Cherbourg Naval Dockyard	Mar 1955	29 June 1957	11 Feb 1959

Displacement, tons: 400 standard; 543 surfaced; 669 dived
Dimensions, feet (metres): 162·7 × 19 × 13·1 *(49·6 × 5·8 × 4)*
Torpedo tubes: 4—21·7 in *(550 mm)* bow, 4 reloads
Main machinery: 12-cyl SEMT-Pielstick diesel-electric; 1 060 bhp diesels; 1 300 hp motors; 1 shaft
Speed, knots: 12·5 surfaced; 16 dived
Complement: 40 (6 officers, 34 men)

Small submarines with a minimum number of ballast tanks and a diving depth of about 600 ft *(182·8 m)*.
Amazone "Réservé Speciale" June 1980 and *Ariane* in March 1981.

Sonar: One active DUUA 2, one passive DUUA 2, one passive ranging DUUX 2, one TUUM 1 (UWT).

"ARÉTHUSE" Class *6/1976, Dr. Giorgio Arra*

6 "NARVAL" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
NARVAL	S 631	Cherbourg Naval Dockyard	June 1951	11 Dec 1954	1 Dec 1957
MARSOUIN	S 632	Cherbourg Naval Dockyard	Sep 1951	21 May 1955	1 Oct 1957
DAUPHIN	S 633	Cherbourg Naval Dockyard	May 1952	17 Sep 1955	1 Aug 1958
REQUIN	S 634	Cherbourg Naval Dockyard	June 1952	3 Dec 1955	1 Aug 1958
ESPADON	S 637	Normand	Dec 1955	15 Sep 1958	2 Apr 1960
MORSE	S 638	Seine Maritime	Feb 1956	10 Dec 1958	2 May 1960

Displacement, tons: 1 320 standard; 1 635 surfaced; 1 910 dived
Dimensions, feet (metres): 254·6 × 25·6 × 17·7 *(77·6 × 7·8 × 5·4)*
Torpedo tubes: 6—21·7 in *(550 mm)* bow; 14 reload torpedoes; capable of minelaying
Main machinery: Diesel-electric, three 12-cyl SEMT-Pielstick diesels; two 2 400 hp electric motors; 2 shafts
Speed, knots: 15 surfaced; 18 dived
Range, miles: 15 000 at 8 knots (snorting)
Endurance: 45 days
Complement: 63 (7 officers, 56 men)

Improved versions based on the German Type XXI. *Dauphin, Marsouin, Narval* and *Requin* were built in seven prefabricated parts each of 32·8 ft *(10 m)* in length.
All in the Atlantic.

Engineering: New main propelling machinery installed on reconstruction during 1965 to 1970 includes diesel-electric drive on the surface with SEMT-Pielstick diesels. The original main machinery was Schneider 4 000 bhp 7-cyl 2 stroke diesels for surface propulsion and 5 000 hp electric motors dived.

DAUPHIN *9/1979, Wright and Logan*

Reconstruction: During a five-year reconstruction programme, announced in 1965 and completed by the end of 1970, these submarines, *Requin* in spring 1967 and *Espadon* and *Morse* in succession at Lorient followed by the other three were given new weapon and detection equipment.

Sonar: As in "Aréthuse" class.

AIRCRAFT CARRIERS

0 + (2) NUCLEAR PROPELLED AIRCRAFT CARRIERS

On 23 September 1980 the Defence Council decided to build two nuclear propelled carriers of 32 000-35 000 tons to replace *Clemenceau* in 1990 and *Foch* some years later. First ship to be laid down at Brest in 1985 (probably *Bretagne*). The second may be named *Provence*. Aircraft complement, 30-40.

2 "CLEMENCEAU" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CLEMENCEAU	R 98	Brest Naval Dockyard	Nov 1955	21 Dec 1957	22 Nov 1961
FOCH	R 99	Chantiers de l'Atlantique	Feb 1957	28 July 1960	15 July 1963

Displacement, tons: 27 307 normal; 32 780 full load
Dimensions, feet (metres): 869·4 × 104·1 hull (with bulges) × 28·2 *(265 × 31·7 × 8·6)*
Width, feet (metres): 168 *(51·2)* oa (flight deck and sponsons)
Aircraft: Capacity 40 (3 Flights)
2 of Super Etendard *(Clemenceau)*,
1 of Crusaders *(Clemenceau)*,
1 of Breguet Alizé (see *Aircraft* note)
Catapults: 2 Mitchell-Brown steam, Mk BS 5
Guns: 8—3·9 in *(100 mm)* automatic in single turrets
Armour Flight deck, island superstructure and bridges, hull (over machinery spaces and magazines)
Main engines: 2 sets Parsons geared turbines; 2 shafts; 126 000 shp
Boilers: 6; steam pressure 640 psi *(45 kg/cm²)*, superheat 842°F *(450°C)*
Speed, knots: 32
Oil fuel, tons: 3 720
Range, miles: 7 500 at 18 knots; 4 800 at 24 knots; 3 500 at full power
Complement: 1 338 (64 officers, 1 274 men) (fixed wing)
984 (45 officers, 939 men) (helo)

First aircraft carriers designed as such and built from the keel to be completed in France. Authorised in 1953 and 1955 respectively. *Clemenceau* ordered from Brest Dockyard on 28 May 1954 and begun in November 1955. *Foch* begun at Chantiers de l'Atlantique at St. Nazaire, Penhoet-Loire, in a special dry dock (contract provided for the construction of the hull and propelling machinery) and completed by Brest Dockyard.
Clemenceau refitted in 1978 to accommodate Super Etendard aircraft and tactical nuclear weapons. Post-refit trials started on 12 November 1978.
Foch had a four month maintenance period in 1979 and a similar refit to *Clemenceau*'s from July 1980 to October 1981, extending her life to about 1995.

Aircraft: Each flight has ten aircraft. In addition two Super Frelon and two Alouette III helicopters are carried. As a peacetime economy only *Clemenceau* operates fixed wing aircraft, *Foch* carrying out A/S duties with a reduced complement, all helicopters. See *Complement* for resultant changes.

Bulges: *Foch* was completed with bulges. These having proved successful, *Clemenceau* was modified similarly on first refit, increasing her beam by 6 ft *(1·83 m)*.

Electronics: Comprehensive DF and ECM equipment. Fitted with SENIT 2 Tactical data automation system after refit. (That in *Foch* transferred from *Tartu*.)

Flight deck: Angled deck, two lifts, measuring 52·5 × 36 ft *(16 × 10·97 m)*, one on the starboard deck edge, two steam catapults and two mirror landing aids. The flight deck measures 543 × 96·8 ft *(165·5 × 29·5 m)* and is angled at 8 degrees. Flight deck letters: F = *Foch*, U = *Clemenceau*.

Gunnery: Originally to have been armed with 24—2·25-in *(57 mm)* guns in twin mountings, but the armament was revised to 12—3·9-in *(100 mm)* in 1956 and to eight 3·9-in *(100 mm)* in 1958. Rate of fire 60 rounds per minute.

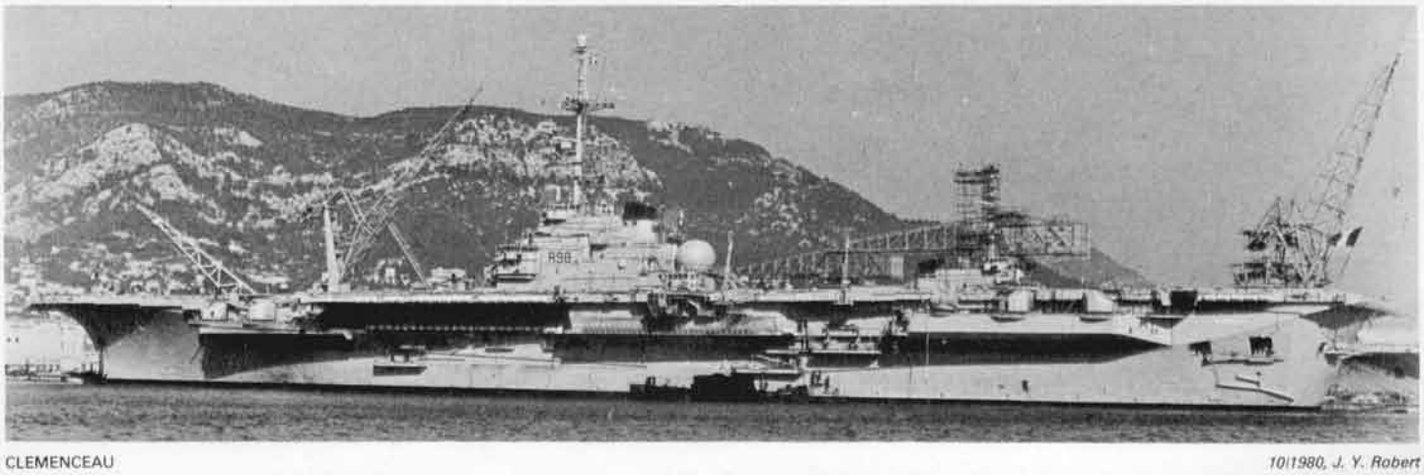
Hangar: Dimensions of the hangar are 590·6 × 78·7 × 23 ft *(180 × 24 × 7 m)*.

Radar: Surveillance: One DRBV 50.
Air surveillance: One DRBV 23B.
Warning: One DRBV 20C.
Fire control: Two DRBC 31 (C in *Foch*, D in *Clemenceau*); Two DRBC 32 (A in *Clemenceau*, C in *Foch*).
Height finders: Two DRBI 10.
Navigation: One Decca; One NRBA.

FOCH *9/1979, J. Y. Robert*

CLEMENCEAU *11/1979, Michael D. J. Lennon*

Sonar: One SQS 503.



CLEMENCEAU *10/1980, J. Y. Robert*

HELICOPTER CARRIER

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
JEANNE D'ARC (ex-*La Résolue*)	R 97	Brest Naval Dockyard	7 July 1960	30 Sep 1961	1 July 1963 (trials) 30 June 1964 (service)

Displacement, tons: 10 000 standard; 12 365 full load
Dimensions, feet (metres): 597·1 × 78·7 hull × 24 *(182 × 24 × 7·3)*
Flight deck, feet (metres): 203·4 × 68·9 *(62 × 21)*
Aircraft: WG 13 Lynx helicopters (4 in peace-time as training ship; 8 in wartime)
Missiles: SSM; 6 Exocet (single cells)
Guns: 4—3·9 in *(100 mm)* single
Main engines: Rateau-Bretagne geared turbines; 2 shafts; 40 000 shp
Boilers: 4; working pressure 640 psi *(45 kg/cm²)*; 842°F *(450°C)*
Speed, knots: 26·5
Oil fuel, tons: 1 360
Range, miles: 6 000 at 15 knots
Complement: 809 (30 officers, 587 ratings and 192 cadets)

Authorised under the 1957 estimates. Used for training officer cadets in peacetime. In wartime, after rapid modification, she would be used as a commando ship, helicopter carrier or troop transport with commando equipment and a battalion of 700 men. The lift has a capacity of 12 tons. The ship is almost entirely air-conditioned.
Operates with the Training Squadron.

Electronics: Two Syllex systems.

Modifications: Between first steaming trials and completion for operational service the ship was modified with a taller funnel to clear the superstructure and prevent the smoke and exhaust gases swirling on to the bridges.

Radar: Air surveillance: One DRBV 22D.
Surveillance: One DRBV 50.
Height finder: One DRBI 10.
Fire control: Three DRBC 32 A.
Navigation: One DRBN 32.

Sonar: One SQS 503.

JEANNE D'ARC *3/1977, Dr. Giorgio Arra*

JEANNE D'ARC *3/1977, Dr. Giorgio Arra*

JEANNE D'ARC *1/1978, Chris Gee*

CRUISER

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
COLBERT	C 611	Brest Dockyard	Dec 1953	24 Mar 1956 (floated out of dry dock)	5 May 1959 (trials late 1957)

Displacement, tons: 8 500 standard; 11 300 full load
Dimensions, feet (metres): 593·2 × 66·1 × 25·2 *(180·8 × 20·2 × 7·7)*
Missiles: SSM: 4 Exocet MM38 (singles) (see notes); SAM: 48 Masurca (1 twin launcher)
Guns: 2—3·9 in *(100 mm)* single automatic; 12—57 mm in 6 twin mountings, 3 on each side
Armour: 50—80 mm belt and 50 mm deck
Main engines: 2 sets CEM-Parsons geared turbines; 2 shafts; 86 000 shp
Boilers: 4 Indret multitubular; 640 psi *(45 kg/cm²)*; 842°F *(450°C)*
Speed, knots: 31·5
Oil fuel, tons: 1 492
Range, miles: 4 000 at 25 knots
Complement: 560 (24 officers, 536 men)

She was equipped as command ship and for radar control of air strikes. Serves as Flagship of the Mediterranean Fleet.

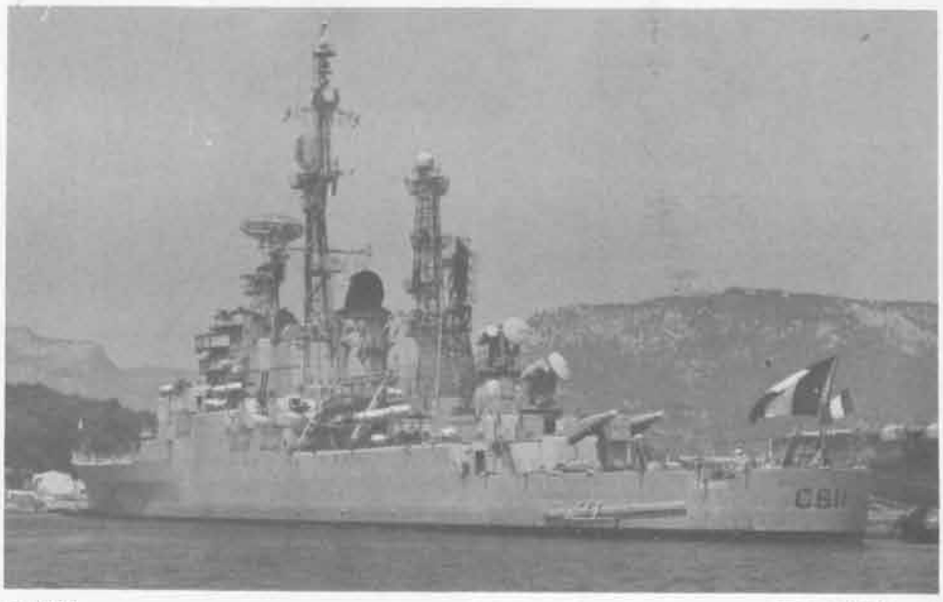
Electronics: SENIT data automation system; radar intercept equipment; wireless intercept equipment; two Knebworth Corvus dual-purpose launchers for CHAFF.

Gunnery: Prior to April 1970 the armament comprised sixteen 5-in *(127 mm)* dual purpose guns in eight twin mountings, and twenty 57 mm Bofors anti-aircraft guns in ten twin mountings.

Missiles: *Colbert* carries Mk 2 Mod 3 semi-active radar homing version missiles for Masurca.

Radar: Surveillance: One DRBV 50.
Air surveillance: One DRBV 23C.
Warning: One DRBV 20.
Fire control: Two DRBR 51; one DRBR 32C; two DRBC 31.
Height finder: One DRBI 10D.
Navigation: One Decca RM 416.

Reconstruction: Between April 1970 and October 1972 she underwent a complete reconstruction and rearmament. The gunnery systems were altered to those given above, the Masurca surface-to-air missile system was fitted and helicopter facilities were installed on the quarter-deck. Reductions in the original armament schedule saved 80 million francs from the original refit cost of 350 million francs.



COLBERT *1978, Ulrich Schimmel*

COLBERT *7/1980, Marius Bar*

COLBERT *7/1980, J. Y. Robert*

DESTROYERS

2 + 4 + (2) TYPE C 70 (A/S)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
GEORGES LEYGUES	D 640	Brest Naval Dockyard	June 1974	17 Dec 1975	10 Dec 1979
DUPLEIX	D 641	Brest Naval Dockyard	17 Oct 1975	2 Dec 1978	Jan 1981
MONTCALM	D 642	Brest Naval Dockyard	5 Dec 1975	31 May 1980	July 1982
—	D 643	Brest Naval Dockyard	26 Oct 1979	1 May 1981	Dec 1983
—	—	Brest Naval Dockyard	1981	—	1985
—	—	Brest Naval Dockyard	—	—	1986

Displacement, tons: 3 830 standard; 4 170 full load
Dimensions, feet (metres): 455·9 × 45·9 × 18·7 *(139 × 14 × 5·7)*
Aircraft: Two WG 13 Lynx helicopters with Mk 46 torpedoes
Missiles: SSM: 4 Exocet; MM38
SAM: 20 Crotale, 1 launcher
Guns: 1—3·9 in *(100 mm)*; 2—20 mm
A/S weapons: 2 fixed launchers for L5 torpedoes (10 carried)
Main engines: CODOG; 2 Rolls-Royce Olympus gas turbines 42 000 bhp; 2 SEMT-Pielstick 16PA6 diesels 10 000 bhp; 2 shafts; cp screws
Speed, knots: 30 (21 on diesels)
Range, miles: 9 500 at 18 knots on diesels
Complement: 216 (15 officers, 201 men) (billets for 250)

So-called "corvette".
A total of eight ships of the A/S version are to be built. Fourth ship was ordered on 4 November 1977. First three were in the 1971-76 new construction programme, fourth in 1978 estimates, fifth in 1980 estimates and sixth in 1981 estimates.

Countermeasures: Two Syllex.

Electronics: SENIT action data automation system. Fitted with Thomson-CSF Vega system.

Fire control: One CSEE Panda optical director.

Helicopter: The Lynx, as well as its A/S role, can have an anti-surface role when armed with four AS 12 missiles.

Preliminary cruise: *Georges Leygues* December 1979, *Dupleix* 1980, *Montcalm* 1982, the fourth in 1983.

Radar: Surface/air surveillance: One DRBV 51.
Air search: One DRBV 26.
Fire control: One DRBC 32 E or D.
Missile control: Two SPG 51C.
Navigation: Two Decca 1226.

Sonar: One DUBV 23 (hull-mounted); one DUBV 43 (VDS).

GEORGES LEYGUES *7/1980, Marius Bar*

GEORGES LEYGUES *1979, French Navy*

GEORGES LEYGUES *1979, French Navy*

0 + 2 + (2) TYPE C 70 (A/A)

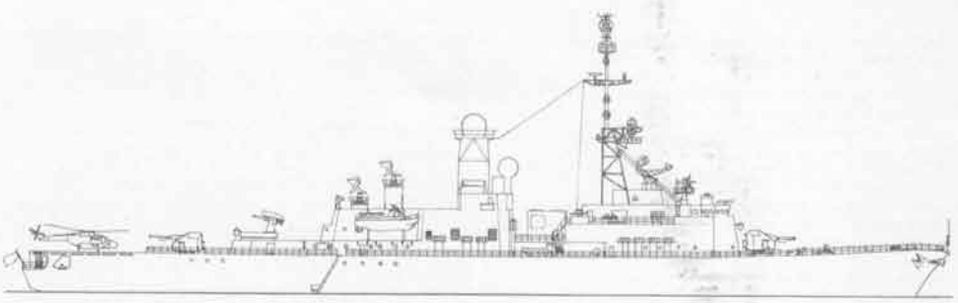
Name	No.	Builders	Laid down	Launched	Commissioned
—	—	Brest Naval Dockyard	—	—	1987
—	—	Brest Naval Dockyard	—	—	1988

Displacement, tons: 4 200 full load
Dimensions, feet (metres): 455·9 × 45·9 × 18·7 *(139 × 14 × 5·7)*
Missiles: SSM: 8 MM40;
SAM: 1—Standard SMI MR (40 missiles)
Guns: 2—3·9 in *(100 mm)*; 2—20 mm
A/S weapons: 2 fixed launchers for L5 torpedoes (10 carried)
Main engines: 4 SEMT-Pielstick 18PA6 BTC "diesels rapides"; 42 400 hp; 2 shafts
Speed, knots: 30
Range, miles: 8 200 at 17 knots; 5 000 at 24 knots
Complement: 200

On the same hull as the C 70 (A/S) a very different armament and propulsion system is being introduced. Funds for the first ship allotted in 1978 estimates and for the second in 1979 estimates. The third and fourth ships will probably commission in 1990. Have helo deck but no hangar.

Countermeasures: Two Sagaie; two Dagaie

Electronics: Senit 6 and Thomson CSF Vega system.



Anti-aircraft version Type C 70 *1980*

Fire control: One CSEE Panda director.

Missile launchers: These will be refitted SAM launchers from the T 47 (DDG) ships, one of the latter paying off for each C 70.

Preliminary cruise: First in 1986, second in 1987.

Radar: Three dimensional: One DRBJ 11.
Air surveillance: One DRBV 26.
Fire control: One DRBC 32D.
Missile control: Two SPG 51C.

Sonar: One DUBV 25.

2 "SUFFREN" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
SUFFREN	D 602	Lorient Naval Dockyard	Dec 1962	15 May 1965	20 July 1967
DUQUESNE	D 603	Brest Naval Dockyard	Nov 1964	12 Feb 1966	1 Apr 1970

Displacement, tons: 5 090 standard; 6 090 full load
Dimensions, feet (metres): 517·1 × 50·9 × 20 *(157·6 × 15·5 × 6·1)*
Missiles: SSM: 4 Exocet (single launchers);
SAM: Masurca (twin launchers)
Guns: 2—3·9 in *(100 mm)* (automatic, single);
4—20 mm (single)
A/S weapons: Malafon single launcher with 13 missiles; 4 launchers (2 each side) for L5 A/S homing torpedoes
Main engines: Double reduction Rateau geared turbines; 2 shafts; 72 500 shp
Boilers: 4 automatic; working pressure 640 psi *(45 kg/cm²)*; superheat 842°F *(450°C)*
Speed, knots: 34
Range, miles: 5 100 at 18 knots; 2 400 at 29 knots
Complement: 355 (23 officers, 332 men)

Ordered under the 1960 Programme. Equipped with gyro controlled stabilisers controlling three pairs of non-retractable fins. Air-conditioning of accommodation and operational areas. Excellent sea-boats and weapon platforms. Both in the Mediterranean.

Electronics: SENIT I action data automatic system. Two Syllex systems.

Missiles: Carry 48 Masurca missiles, a mix of Mk 2 Mod 2 beam riders and Mk 2 Mod 3 semi-active homers. During their 1977-78 refit four Exocet launchers replaced the 30 mm gun mountings. *Duquesne* completed February 1977, *Suffren* 1979.

Radar: Search and navigation: One DRBN 32.
Air surveillance and target designator (radome): One DRBI 23.
Surface surveillance: One DRBV 50.
Masurca fire control: Two DRBR 51.
Gun fire control: One DRBC 32A.

Sonar: One DUBV 23 hull-mounted set and one DUBV 43 VDS.

SUFFREN *6/1980, Marius Bar*

DUQUESNE *1979, Michael D. J. Lennon*

3 TYPE F 67 (ex-C-67A)

Name	No.	Builders	Laid down	Launched	Commissioned
TOURVILLE	D 610	Lorient Naval Dockyard	16 Mar 1970	13 May 1972	21 June 1974
DUGUAY-TROUIN	D 611	Lorient Naval Dockyard	25 Feb 1971	1 June 1973	17 Sep 1975
DE GRASSE	D 612	Lorient Naval Dockyard	1972	30 Nov 1974	1 Oct 1977

Displacement, tons: 4 580 standard; 5 745 full load
Dimensions, feet (metres): 501·3 × 50·2 × 18·7 *(152·8 × 15·3 × 5·7)*
Aircraft: Two WG 13 Lynx ASW helicopters
Missiles: SSM; 6 Exocet (single launchers); SAM; Crotale S-A (see *note*)
Guns: 2—3·9 in *(100 mm)*
A/S weapons: 1 Malafon rocket/homing torpedo launcher (13 missiles); 2 mountings for Mk L5 torpedoes (10 torpedoes)
Main engines: Rateau geared turbines; 2 shafts; 54 400 shp
Boilers: 4 automatic
Speed, knots: 32
Range, miles: 5 000 at 18 knots
Complement: 292 (17 officers, 275 men)

Developed from the "Aconit" design. Originally rated as corvettes but reclassified as frigates on 8 July 1971 and given D pennant numbers like destroyers.
All in the Atlantic.

Electronics: SENIT 3 action data automatic system. Fitted with Thomson-CSF Vega system. Two Syllex systems.

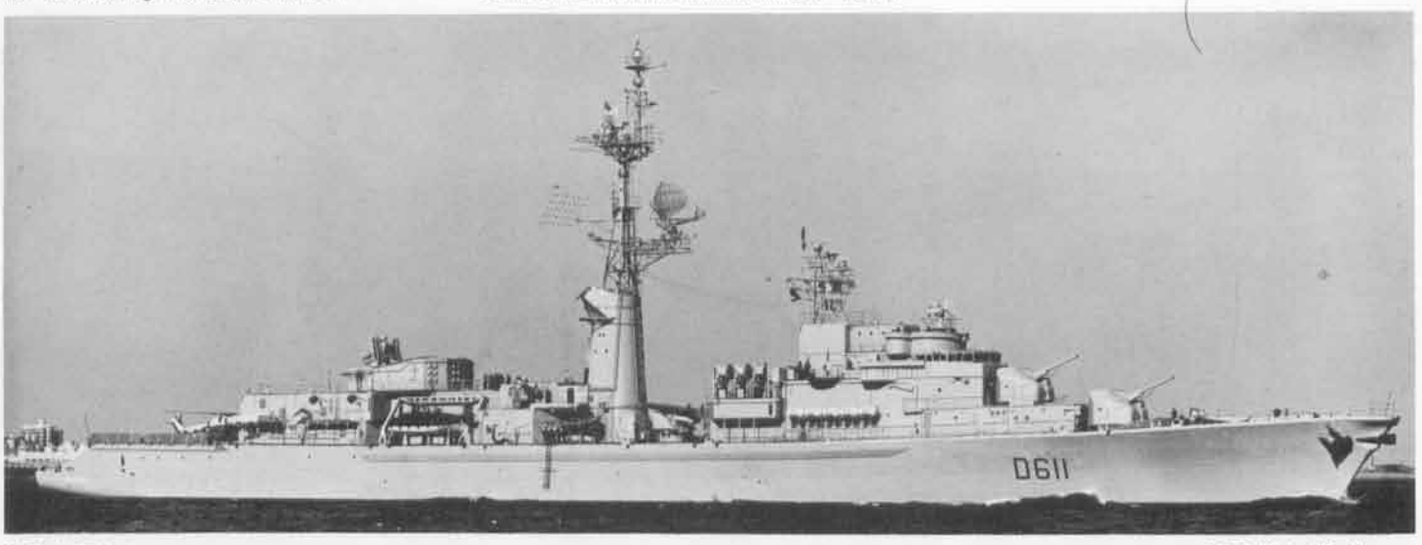
Missiles: Octuple Crotale fitted in place of after 100 mm gun. *Duguay-Trouin* in 1979, *Tourville* in 1980 and *De Grasse* 1981.

Radar: Surface/air surveillance: One DRBV 51.
Fire control: One DRBC 32D.
Navigation: Two Decca type 1226.
Air search: One DRBV 26.

Refit: *Duguay-Trouin* started trials on 1 December 1979 after her first refit during which Crotale was fitted.

DUGUAY-TROUIN *8/1980, Michael D. J. Lennon*

Sonar: One DUBV 23 hull-mounted; one DUBV 43 VDS.



DUGUAY-TROUIN *8/1980, Michael D. J. Lennon*

1 TYPE T 56

Name	No.	Builders	Laid down	Launched	Commissioned
LA GALISSONNIÈRE	D 638	Lorient Naval Dockyard	Nov 1958	12 Mar 1960	9 July 1962

Displacement, tons: 2 750 standard; 3 910 full load
Dimensions, feet (metres): 435·7 × 41·7 × 21·4 *(132·8 × 12·7 × 6·3)*
Aircraft: One A/S helicopter
A/S weapons: 1 Malafon rocket/homing torpedo launcher
Guns: 2—3·9 in *(100 mm)* automatic, single
Torpedo tubes: 6—21·7 in *(550 mm)* (2 triple for Mks K2 and L3)
Main engines: 2 sets Rateau geared turbines; 2 shafts; 63 000 shp
Boilers: 4 A & C de B Indret; 500 psi *(35 kg/cm²)*; 617°F *(380°C)*
Speed, knots: 34
Oil fuel, tons: 800
Range, miles: 5 000 at 18 knots
Complement: 270 (15 officers, 255 men)

Same characteristics as regards hull and machinery as T 47 and T 53 types, but different armament. She has a hangar which hinges outwards and a platform for landing a helicopter. When first commissioned she was used as an experimental ship for new sonars and anti-submarine weapons.
Serves in the Mediterranean.

Armament: First French combatant ship to be armed with Malafon. This is the reason for the two 3·9-in *(100 mm)* guns instead of the three or four previously planned. France's first operational guided missile ship.

Electronics: Tacan beacon and full DF and ECM fit.

Radar: Surface/air surveillance: One DRBV 50.
Navigation: One DRBN 32.
Air search: One DRBV 22.
Gun fire control: One DRBC 32A.

Sonar: One hull-mounted DUBV 23; one DUBV 43 VDS.

LA GALISSONNIÈRE (with heightened Tacan mast) *7/1979, J. Y. Robert*

1 TYPE T 53 (MODIFIED—ASW)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DUPERRÉ	D 633	Lorient Naval Dockyard	Nov 1954	23 June 1956	8 Oct 1957

Displacement, tons: 2 800 standard; 3 900 full load
Dimensions, feet (metres): 435·7 × 41·7 × 20 *(132·8 × 12·7 × 6·1)*
Aircraft: One WG 13 Lynx helicopter
Missiles: SSM; 4 Exocet (single launchers)
Gun: 1—3·9 in *(100 mm)*
A/S weapons: Launcher for 8 torpedoes (Mk L5)
Main engines: 2 sets Rateau geared turbines; 2 shafts; 63 000 shp
Boilers: 4 A & C de B Indret; 500 psi *(35 kg/cm²)*; 617°F *(380°C)*
Speed, knots: 32
Oil fuel, tons: 800
Range, miles: 5 000 at 18 knots
Complement: 272 (15 officers, 257 men)

After serving as trial ship from 1967-71, she was converted at Brest to her present state in 1972-74 including an improved ASW control and flagship facilities. Recommissioned 21 May 1974 and served as flagship Atlantic Fleet. On Friday 13 January 1978 she grounded heavily off Brest and was severely damaged. Taken to Brest Navy Yard for repairs. Completion February 1980 after sea trials starting 3 December 1979. Has had both main propulsion and electrical equipment replaced. Resumed duties as flagship of the Atlantic Fleet in 1980.

Electronics: One SENIT automatic data system. Thomson-CSF Vega system. Two K. Corvus launchers.

Gunnery: Radar, TV, IR fire control for 100 mm gun.

Radar: Air search: One DRBV 22A.
Surface/air surveillance: One DRBV 51.
Fire control: One DRBC 32E.
Navigation: One Decca.
Helicopter control: One Decca

Sonar: DUBV 23 hull-mounted; DUBV 43 VDS.

DUPERRÉ *1980, French Navy*

4 TYPE T 47 (DDGs)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KERSAINT	D 622	Lorient Naval Dockyard	June 1951	3 Oct 1953	20 Mar 1956
BOUVET	D 624	Lorient Naval Dockyard	Nov 1951	3 Oct 1953	13 May 1956
DUPETIT THOUARS	D 625	Brest Naval Dockyard	Mar 1952	4 Mar 1954	15 Sep 1956
DU CHAYLA	D 630	Brest Naval Dockyard	July 1953	27 Nov 1954	4 June 1957

Displacement, tons: 2 750 standard; 3 740 full load
Dimensions, feet (metres): 421·9 × 41·7 × 21·4 *(128·6 × 12·7 × 6·3)*
Missiles: SAM; 40 Tartar SMI or SMIA (single Mk 13 launcher)
Guns: 6—57 mm (twins)
A/S weapons: 2 triple mountings *(550 mm)* for Mk K2 and L3; 1—375 mm Mk 54 projector
Main engines: 2 geared turbines; 63 000 shp; 2 shafts
Boilers: 4 A & C de B Indret (as in *Duperré*)
Speed, knots: 32
Oil fuel, tons: 800
Range, miles: 5 000 at 18 knots
Complement: 277 (17 officers, 260 men) (peace); 320 (war)

Originally built as destroyers with six 5-in guns. Converted into DDGs 1961-65. All in the Atlantic.

Electronics: SENIT automatic data system.

Radar: Air search: One DRBV 20 A—DRBV 22 in D 625 and 630.
Tartar search (3D): One SPS 39A or B.
Tartar control: Two SPG 51B.
Navigation: One DRBV 31.

Refits: *Dupetit Thouars* refitted from January 1979 until early 1980, probably to be followed by *Du Chayla*.

Sonar: One DUBA 1; one DUBV 24.

KERSAINT *1976, Michael D. J. Lennon*

5 TYPE T 47 (ASW)

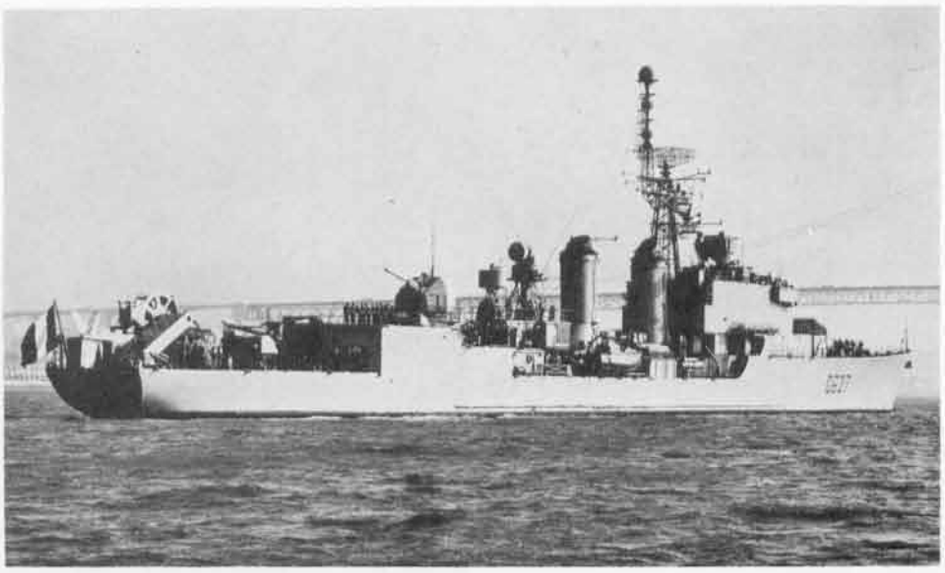
Name	No.	Builders	Laid down	Launched	Commissioned
MAILLE BRÈZÉ	D 627	Lorient Naval Dockyard	Oct 1953	26 Sep 1954	4 May 1957
VAUQUELIN	D 628	Lorient Naval Dockyard	Mar 1953	26 Sep 1954	3 Nov 1956
D'ESTRÉES	D 629	Brest Naval Dockyard	May 1953	27 Nov 1954	19 Mar 1957
CASABIANCA	D 631	F. C. Gironde	Oct 1953	13 Nov 1954	4 May 1957
GUÉPRATTE	D 632	A. C. Bretagne	Aug 1953	8 Nov 1954	6 June 1957

Displacement, tons: 2 750 standard; 3 900 full load
Dimensions, feet (metres): 434·6 × 41·7 × 21·4 *(132·5 × 12·7 × 6·3)*
Guns: 2—3·9 in *(100 mm)* (singles); 2—20 mm
A/S weapons: 1 Malafon; 1—375 mm Mk 54 projector; 2 triple mountings *(550 mm)* for Mk K2 and L3
Main engines: 2 geared turbines; 63 000 shp; 2 shafts
Boilers: 4 A & C de B Indret (as in *Duperré*)
Speed, knots: 32
Oil fuel, tons: 800
Range, miles: 5 000 at 18 knots
Complement: 260 (15 officers, 245 men)

Originally built as destroyers with six 5-in guns. Converted for ASW between 1968-71 including air-conditioning of living spaces, replacement of electronic equipment and up-dating of damage control equipment. *Maille Brèzé, Vauquelin* and *Casabianca* in the Atlantic, the others in the Mediterranean.

Radar: Navigation: One DRBN 32.
Air surveillance: One DRBV 22A.
Air/surface search: One DRBV 50.
Gun fire control: Two DRBC 32A.

Sonar: One DUBV 23 hull-mounted; one DUBV 43 VDS.



MAILLE BRÈZÉ

3/1980, Marius Bar

CASABIANCA

4/1979, Michael D. J. Lennon

1 TYPE C 65

Name	No.	Builders	Laid down	Launched	Commissioned
ACONIT	D 609 (ex-*F 703*)	Lorient Naval Dockyard	Jan 1966	7 Mar 1970	30 Mar 1973 (trials 15 May 1971)

Displacement, tons: 3 500 standard; 3 900 full load
Dimensions, feet (metres): 416·7 × 44 × 18·9 *(127 × 13·4 × 5·8)*
Missiles: SSM: 4 Exocet (single cells)
Guns: 2—3·9 in *(100 mm)*
A/S weapons: 1 Malafon launcher; 1 quad 12 in *(305 mm)* mortar; 2 launchers for Mk L5 torpedoes
Main engines: 1 Rateau geared turbine; 1 shaft; 28 650 shp
Boilers: 2 automatic (450°C)
Speed, knots: 27
Range, miles: 5 000 at 18 knots
Complement: 228 (15 officers, 213 men)

Forerunner of the F67 Type. A one-off class ordered under 1965 programme. In the Atlantic Fleet.

Electronics: An early form of centralised data analysis. Two Syllex systems.

Radar: Pulse Doppler (E/F band surveillance): One DRBV 13.
Air surveillance: One DRBV 22A.
100 mm guns fire control: One DRBC 32B.
Navigation: One DRBN 32.

Refit: 1 July 1977-1 April 1978 including the fitting of Exocet.

Sonar: One hull-mounted DUBV 23; one DUBV 43 VDS.

ACONIT

2/1977, Michael D. J. Lennon

FRIGATES

9 "COMMANDANT RIVIÈRE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
VICTOR SCHOELCHER	F 725	Lorient Naval Dockyard	Oct 1957	Oct 1958	15 Oct 1962
COMMANDANT BORY	F 726	Lorient Naval Dockyard	Mar 1958	Oct 1958	5 Mar 1964
AMIRAL CHARNER	F 727	Lorient Naval Dockyard	Nov 1958	Mar 1960	14 Dec 1962
DOUDART DE LAGRÉE	F 728	Lorient Naval Dockyard	Mar 1960	Apr 1961	1 May 1963
BALNY	F 729	Lorient Naval Dockyard	Mar 1960	Mar 1962	1 Feb 1970
COMMANDANT RIVIÈRE	F 733	Lorient Naval Dockyard	Apr 1957	Oct 1958	4 Dec 1962
COMMANDANT BOURDAIS	F 740	Lorient Naval Dockyard	Apr 1959	Apr 1961	10 Mar 1963
PROTET	F 748	Lorient Naval Dockyard	Sep 1961	Dec 1962	1 May 1964
ENSEIGNE DE VAISSEAU HENRY	F 749	Lorient Naval Dockyard	Sep 1962	Dec 1963	1 Jan 1965

Displacement, tons: 1 750 standard; 2 250 full load
(*Balny* 1 650 standard; 1 950 full load)
Dimensions, feet (metres): 340·3 × 38·4 × 15·7
(103·7 × 11·7 × 4·8)
Aircraft: 1 light helicopter can land aft
Missiles: SSM; 4 Exocet (single cells) (except *Balny*)
Guns: 2—3·9 in *(100 mm)* automatic, singles (3 in *Balny*);
2—30 mm
A/S weapons: 1—12 in *(305 mm)* quad mortar;
6—21 in *(533 mm)* (triple) for Mk K2 and L3
Main engines: 4—SEMT-Pielstick diesels; 16 000 bhp; 2 shafts;
(except *Balny;* CODAG; 2 diesels (16-cyl);
one TG SNECMA M38; 1 shaft; vp screw)
Speed, knots: 25
Range, miles: 7 500 at 15 knots *(Balny* 8 000 at 12 knots*)*
Complement: 167 (10 officers, 157 men)

Built for world-wide operations—air-conditioned.
Commandant Bourdais stationed in the Indian Ocean. *Protet* in the Pacific.
Doudart de Lagrée refitted prior to taking over from *Forbin* as escort for *Jeanne d'Arc.*

Accommodation: Can carry a senior officer and staff. If necessary a force of 80 soldiers can be carried as well as two 30 ft *(9 m)* LCPs with a capacity of 25 men at 11 knots.

Engines: Experimental CODAG arrangement in *Balny.*
Commandant Bory was fitted with experimental machinery which was replaced with SEMT-Pielstick diesels in 1974-75.

Helicopter: In 1973 *Amiral Charner, Commandant Bourdais* and *Enseigne Henry* were fitted with a helicopter platform. All these platforms now removed to make way for Exocet. (See *Missiles* note).

Missiles: All of this class except *Balny* have been fitted with four MM 38 Exocet in place of X gun. *Bory* was the first to be fitted followed by *Doudart de Lagrée.* At the same time the 100 mm gun was replaced in Y position.

Radar: Navigation: One DRBN 32.
Fire control: One DRBC 32A.
Air search: One DRBV 22A.
Surface/air search: One DRBV 50.
Exocet ships: One DRBC 32C.

Sonar: One DUBA 3; one SQS 17.

COMMANDANT RIVIÈRE *4/1978, Michael D. J. Lennon*

COMMANDANT RIVIÈRE *4/1978, Michael D. J. Lennon*

2 TYPE E 52B

Name	No.	Builders	Laid down	Launched	Commissioned
L'ALSACIEN	F 776	Lorient Naval Dockyard	July 1956	26 Jan 1957	27 Aug 1960
LE VENDÉEN	F 778	F. Ch. de la Mediterranée	Mar 1957	27 July 1957	1 Oct 1960

Displacement, tons: 1 250 standard; 1 702 full load
Dimensions, feet (metres): 327·4 × 33·8 × 13·5
(99·8 × 10·3 × 4·1)
Guns: 6—2·25 in *(57 mm)* in twin mountings; 2—20 mm
A/S weapons: 1—12 in *(305 mm)* quad mortar; 2 DC mortars;
1 DC rack; 12 tubes (4 triple mountings aft) for Mk K2 and L3
Main engines: Parsons or Rateau geared turbines; 20 000 shp
Boilers: 2 Indret; pressure 500 psi *(35·2 kg/cm²);*
superheat 725°F *(385°C)*
Speed, knots: 27
Range, miles: 4 500 at 15 knots
Oil fuel, tons: 310
Complement: 205 (13 officers, 192 men)

L'Alsacien and *Le Vendéen* have the Strombos-Velensi modified funnel cap.

Class: *L'Agenais* converted to trials ship (A 784) with after gun mounting removed and VDS fitted (see Trials Ships). *Béarnaise* deleted 1980. *Le Picard* to "Réserve Spéciale" on 21 December 1979, *Le Savoyard* 29 February 1980, *Le Basque* 28 December 1979, *Le Provençal* 1 September 1980 and *Le Normand* 1 December 1980.
L'Alsacien and *Le Vendéen* to reserve in late 1981.

Radar: Navigation: One DRBV 31.
Air search: One DRBV 22A.
Fire control: One DRBC 31 A or B, one with DRBC 32.

Sonar: One DUBV 24; one DUBA 1.

L'ALSACIEN *7/1980, L. and L. van Ginderen*

10 + 7 + (1) TYPE A 69

Name	No.	Builders	Laid down	Launched	Commissioned
D'ESTIENNE D'ORVES*	F 781	Lorient Naval Dockyard	1 Sep 1972	1 June 1973	10 Sep 1976
AMYOT D'INVILLE	F 782	Lorient Naval Dockyard	Sep 1973	30 Nov 1974	13 Oct 1976
DROGOU*	F 783	Lorient Naval Dockyard	1 Oct 1973	30 Nov 1974	30 Sep 1976
DÈTROYAT	F 784	Lorient Naval Dockyard	15 Dec 1974	31 Jan 1976	4 May 1977
JEAN MOULIN	F 785	Lorient Naval Dockyard	15 Jan 1975	31 Jan 1976	11 May 1977
QUARTIER MAITRE ANQUETIL*	F 786	Lorient Naval Dockyard	1 Aug 1975	7 Aug 1976	4 Feb 1978
COMMANDANT DE PIMODAN*	F 787	Lorient Naval Dockyard	1 Sep 1975	7 Aug 1976	20 May 1978
SECOND MAITRE LE BIHAN	F 788	Lorient Naval Dockyard	1 Nov 1976	13 Aug 1977	7 July 1979
LIEUTENANT DE VAISSEAU LE HENAFF	F 789	Lorient Naval Dockyard	—	16 Sep 1978	13 Feb 1980
LIEUTENANT DE VAISSEAU LAVALLÉE	F 790	Lorient Naval Dockyard	1 Nov 1977	29 May 1979	16 Aug 1980
COMMANDANT L'HERMINIER	F 791	Lorient Naval Dockyard	1 May 1979	—	1982
PREMIER MAITRE L'HER	F 792	Lorient Naval Dockyard	15 Dec 1978	28 June 1980	1981
COMMANDANT BLAISON	F 793	Lorient Naval Dockyard	15 Nov 1979	—	1982
ENSEIGNE DE VAISSEAU JACOUBET	F 794	Lorient Naval Dockyard	1979	—	1982
—	F 795	Lorient Naval Dockyard	—	—	1982
—	F 796	Lorient Naval Dockyard	—	—	1983
—	F 797	Lorient Naval Dockyard	—	—	1984

*Exocet fitted

Displacement, tons: 950 standard; 1 170 full load
Dimensions, feet (metres): 262·5 × 33·8 × 17·4 (sonar)
(80 × 10·3 × 5·3)
Missiles: SSM: 2 Exocet (single launchers) (see *Missiles* note)
Guns: 1—3·9 in *(100 mm)*; 2—20 mm
A/S weapons: 1—375 mm Mk 54 rocket launcher; 4 fixed tubes for Mk L3 and L5 torpedoes
Main engines: 2 SEMT-Pielstick PC2V diesels; 2 shafts; cp propellers; 11 000 bhp
Speed, knots: 24
Range, miles: 4 500 at 15 knots
Endurance, days: 15
Complement: 79 (5 officers, 74 men)

Primarily intended for coastal A/S operations—officially classified as "Avisos". Also available for overseas patrols and can carry an extra detachment of one officer and 17 men. *D'Estienne d'Orves* commissioned for trials 26 October 1974. Another ship of this class ordered under 1979 budget, two more in 1980 with No 18 expected in 1982 estimates; a total of 18 is planned.

Appearance: *Jean Moulin* F 785 has a modified funnel, a feature in all ships in due course. All masts are being replaced.

Deployment: Mediterranean—F 781, 783, 786.
Atlantic—F 782, 784, 785.
English Channel (Cherbourg)—F 787, 788, 789.

Electronics: Thomson-CSF Vega system.

Engineering: *Commandant L'Herminier* to be fitted with 18PA 6BTC "Diesels Rapides".

Missiles: Two MM 38 Exocet fitted in those ships earmarked for the Mediterranean—either side of the funnel. The remainder will be fitted "for but not with". Exocet fitted in F 781, 783, 786 and 787.

Preliminary cruise: *Lavallée* 1 July 1980, *L'Her* 1981, *L'Herminier* 1982, *Blaison* 1982, *Jacoubet* late 1982, No 15 early 1983.

Radar: Surface/air search: One DRBV 51A.
Fire control: One DRBC 32E.
Navigation: One DRBN 32.

Sonar: One hull-mounted DUBA 25.

Transfers: *Lieutenant de Vaisseau Le Henaff* (F 789) and *Commandant l'Herminier* (F 791) sold to South Africa in 1976 whilst under construction. As a result of the UN embargo on arms sales to South Africa, they were sold to Argentina in September 1978. Subsequently two ships with the same names were laid down to replace them.

LIEUTENANT DE VAISSEAU LE HENAFF — *3/1980, Marius Bar*

DROGOU — *1980, French Navy*

DÈTROYAT — *9/1979, Michael D. J. Lennon*

AMPHIBIOUS FORCES

2 LANDING SHIPS (DOCKS) (TCDs)

Name	No.	Builders	Laid down	Launched	Commissioned
OURAGAN	L 9021	Brest Naval Dockyard	June 1962	9 Nov 1963	1 June 1965
ORAGE	L 9022	Brest Naval Dockyard	June 1966	22 Apr 1967	1 Apr 1968

Displacement, tons: 5 800 light; 8 500 full load; 15 000 when fully docked down
Dimensions, feet (metres): 488·9 × 75·4 × 17·7 (28·5 flooded) *(149 × 23 × 5·4 (8·7))*
Aircraft: Main helo deck; 3 Super Frelon or 10 Alouette helicopters. Portable platform; 1 Super Frelon or 3 Alouette helicopters.
Guns: 2—4·7 in *(120 mm)* mortars; 4—40 mm
Main engines: 2 diesels; 2 shafts; (cp propellers); 8 600 bhp
Speed, knots: 17
Range, miles: 9 000 at 15 knots
Complement: 238; 343 troops; 129 passengers (short haul)

Ouragan was completed for trials in 1964. Bridge is on the starboard side. Fitted with a platform for helicopters and portable platform aft. Able to carry two EDICs loaded with eleven light tanks each, or 18 loaded LCMs Type VI. In the logistic role 1 500 tons of material and equipment can be carried and handled by two 35 ton cranes. *Orage* is allocated to the Pacific Nuclear Experimental Centre. Have command facilities for directing amphibious and helicopter operations. Carry three LCVPs. *Orage* serves in the Pacific.

Docking: Can dock a 400 ton ship.

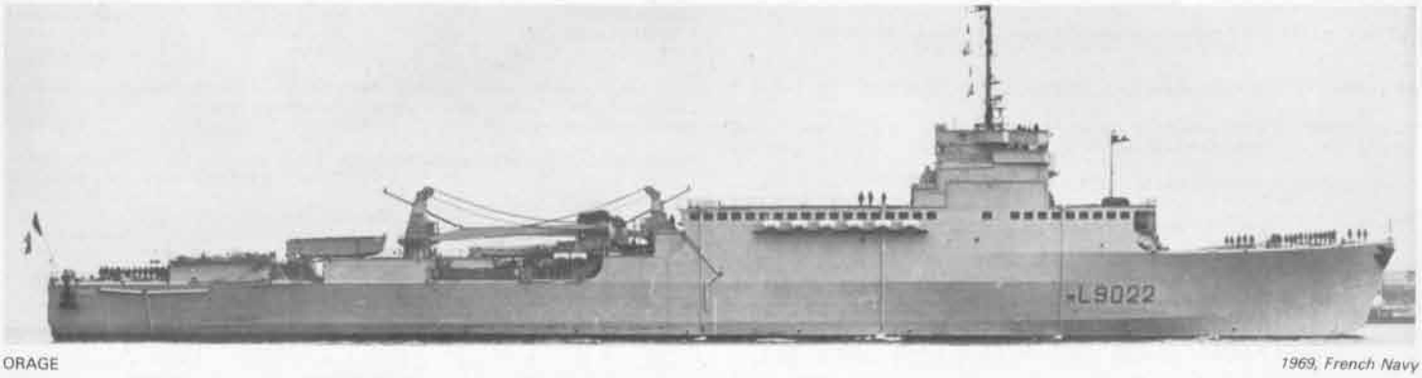
Loading: Typical loads—18 Super Frelon or 80 Alouette helicopters or 120 AMX 13 tanks or 84 DUKWs or 340 Jeeps or 12—50 ton barges.

Radar: Navigation: DRBN 32.

Repair facilities: Carry main, hull, engine, carpenters, electrical and ordnance workshops.

Sonar: One SQS-17 in *Ouragan*.

OURAGAN *6/1980, Marius Bar*



ORAGE *1969, French Navy*

2 + 2 + (2) BATRAL TYPE (LIGHT TRANSPORTS)

Name	No.	Builders	Commissioned
CHAMPLAIN	L 9030	Brest Naval Dockyard	5 Oct 1974
FRANCIS GARNIER	L 9031	Brest Naval Dockyard	21 June 1974
—	—	Chantiers de Normandie	—
—	—	Chantiers de Normandie	—

Displacement, tons: 750 standard; 1 409 full load
Dimensions, feet (metres): 262·4 × 42·6 × 7·9 *(80 × 13 × 2·4)*
Guns: 2—40 mm; 1—81 mm mortar; 2—12·7 mm MGs
Main engines: 2 diesels; 2 shafts; (cp propellers); 3 600 hp = 16 knots
Range, miles: 4 500 at 13 knots (economical)
Complement: 39

Fitted with bow doors, and stowage for vehicles above and below decks. Helicopter landing platform. Can carry a landing company (Guépard) of five officers and 133 men with 12 vehicles. Both launched 17 November 1973. Two more ordered 1980. First of new orders due for preliminary cruise in 1982. Plans exist for a further two to be ordered in 1984 for delivery in 1986. Total load 380 tons. One LCVP carried and one LCPS. A 10 ton derrick fitted.

Radar: Decca navigation.

Sonar: Two hull-mounted.

CHAMPLAIN *8/1977, J. Y. Robert*

5 LANDING SHIPS (TANKS) (BDCs)

Name	No.	Builders	Commissioned
ARGENS	L 9003	Ch. de Bretagne	27 June 1960
BIDASSOA	L 9004	Ch. Seine Maritime	1 Oct 1961
TRIEUX	L 9007	Ch. de Bretagne	18 Mar 1960
DIVES	L 9008	Ch. Seine Maritime	14 Apr 1961
BLAVET	L 9009	Ch. de Bretagne	1 Jan 1961

Displacement, tons: 1 400 standard; 1 765 normal; 4 225 full load
Dimensions, feet (metres): 335 × 50·9 × 10·5 *(102·1 × 15·5 × 3·2)*
Guns: 3—40 mm; 1—20 mm; 1—4·7 in *(120 mm)* mortar (twin barrels)
Main engines: SEMT-Pielstick diesels; 2 shafts; 2 000 bhp = 11 knots
Range, miles: 18 500 at 10 knots
Complement: 75 (6 officers and 69 men) . Plus 170 troops (normal)

Launched on 7 April 1959, 30 December 1960, 15 January 1960, 29 June 1960 and 6 December 1958, respectively. Can carry: four LCVPs, 1 800 tons of freight, 335 troops under austere conditions (up to 807 in a brief emergency). *Blavet* and *Trieux* are fitted as light helicopter carriers with a hangar before the bridge and can carry two Alouette III.

DIVES *9/1979, Marius Bar*

12 LANDING CRAFT (TANKS) (EDICs)

L 9070 (29 Mar 1967) **L 9072** (2 May 1969) **L 9073** (10 May 1969) **L 9074** (7 Feb 1970)
L 9082 (17 June 1965) **L 9083** (5 Feb 1966) **L 9084** (5 Nov 1965) **L 9091** (3 Jan 1959)
L 9092 (17 Feb 1959) **L 9093** (17 Feb 1959) **L 9094** (12 June 1959) **L 9096** (15 May 1959)

Displacement, tons: 250 standard; 670 full load
Dimensions, feet (metres): 193·5 × 39·2 × 4·5 *(59 × 12 × 1·3)*
Guns: 2—20 mm
Main engines: MGO diesels; 2 shafts; 1 000 bhp = 8 knots
Range, miles: 1 800 at 8 knots
Complement: 16 (1 officer, and 15 men)

Seven were built by C. N. Franco Belges, three by Toulon Dockyard, two by La Perrière. Commissioning dates above. Can carry eleven lorries or five light fighting vehicles.

Deployment: Lorient: L 9070, 9091, 9096.
Toulon: L 9092, 9093.
Papeete: L 9082.
Pacific Test Range: L 9072, 9073, 9074.
Comoro Islands: L 9084.

Transfer: L 9095 transferred to Senegal 1 July 1974 as *La Falence*.

L 9092 *8/1979, L. and L. van Ginderen*

16 LCMs

CTM 1 to 16

Displacement, tons: 56 standard; 150 full load
Dimensions, feet (metres): 92·8 × 21 × 3·9 *(28·3 × 6·4 × 1·2)*
Main engines: Hispano diesels; 2 shafts; 225 hp = 9·5 knots
Complement: 6

Can carry up to 90 tons in coastal or protected waters. Built 1966-67. Bow ramp.

14 LCMs

1031 **1035** **1036** **1041** **1045** **1052** **1055** **1056** **1074** **1076**
1084 **1087** **10065** **VETERANZ**

Of varying displacements between 26 and 52 tons.

LIGHT FORCES

Note: A hydrofoil project named *Saphyr* (180 tons, 50 knots) is under development.

0 + 2 "SUPER PATRA" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 300
Dimensions, feet (metres): 164 × 23 × — *(50 × 7 × —)*
Speed, knots: 28·5

Ordered in 1981 budget. To commission in 1983. Six more are expected, two to commission each year in 1984, 1985 and 1986.

4 "PATRA" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
TRIDENT	P 670	Auroux, Arcachon	17 Dec 1976
GLAIVE	P 671	Auroux, Arcachon	2 Apr 1977
EPEE	P 672	C.M.N. Cherbourg	9 Oct 1976
PERTUISANE	P 673	C.M.N. Cherbourg	20 Jan 1977

Displacement, tons: 115 standard; 130 full load
Dimensions, feet (metres): 121·4 × 18 × 5·2 *(37 × 5·5 × 1·6)*
Missiles: 6—SS 12
Guns: 1—40 mm; 1—12·7 mm
Main engines: 2 AGO diesels; 2 shafts (cp propellers); 4 000 hp = 26 knots
Range, miles: 1 750 at 10 knots; 750 at 20 knots
Complement: 18 (1 officer and 17 men)

Trident laid down 3 December 1974, launched 31 May 1975; *Glaive*, 16 January 1975 and 27 August 1976; *Epée* 10 April 1975, 31 March 1976; *Pertuisane*, 26 August 1975 and 2 June 1976. These were intended as lead boats for a class of 30 in "Plan Bleu" of which 16 were to be adapted for overseas service. Like other craft of similar size they have proved too small for their intended role.
Trials for *Trident* started 1 October 1975.

GLAIVE *2/1980, Michael D. J. Lennon*

1 "LA COMBATTANTE I" TYPE (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
LA COMBATTANTE	P 730	C.M.N. Cherbourg	1 Mar 1964

Displacement, tons: 180 standard; 202 full load
Dimensions, feet (metres): 147·8 × 24·2 × 6·5 *(45 × 7·4 × 2·5)*
Missiles: 1 quad launcher for SS 11
Guns: 2—40 mm
Main engines: 2 "diesel rapides"; 2 shafts; cp propellers; 3 840 bhp = 28 knots
Range, miles: 2 000 at 12 knots
Complement: 25 (3 officers, 22 men)

Authorised under the 1960 Programme. Laid down in April 1962, launched on 20 June 1963. Of wooden and plastic laminated non-magnetic construction. Can carry a raiding force of 80 for a very short run. Now based in Tahiti.

Gunnery: Flare launcher aft replaced by 40 mm Mk 3 gun before she left for Indian Ocean in 1975.

Refit: Refitted 1978-79 at Cherbourg and fitted with new diesels.

LA COMBATTANTE *1974, Dr. Giorgio Arra*

5 "SIRIUS" CLASS (LARGE PATROL CRAFT)

Name	*No*	*Builder*	*Commissioned*
ARCTURUS	P 650	C.N. Caen	8 Nov 1954
ALTAIR	P 656	C.M.N.	28 Apr 1958
CANOPUS	P 659	Normand	17 Sep 1956
ÉTOILE POLAIRE	P 660	Seine Maritime	1 Oct 1958
LYRE	P 759	Penhoët	13 Feb 1957

All of "Sirius" class minesweepers (see *Mine Warfare* section for details) transferred for coastal patrol operations 1973. Minesweeping gear removed. *Vega* reserve.
Lyre to be paid off mid-1981.

Transfer: *Croix du Sud* to Seychelles May 1979.

LYRE *3/1979, Leo van Ginderen*

1 "LE FOUGUEUX" CLASS (LARGE PATROL CRAFT)

Name	*No*	*Builder*	*Commissioned*
LE FRINGANT	P 640	F. C. Mediterranée	1960

Displacement, tons: 325 standard; 400 full load
Dimensions, feet (metres): 173·9 × 24 × 10·2 *(53 × 7·3 × 3·1)*
Gun: 1—40 mm Bofors
A/S weapons: 1—120 mm A/S mortar; 2 DC mortars; 2 DC racks
Main engines: 4 SEMT-Pielstick diesel engines coupled 2 by 2; 3 240 bhp = 18·6 knots
Range, miles: 3 000 at 12 knots; 2 000 at 15 knots
Complement: 46 (4 officers, 42 men)

Originally class of 17. *L'Adroit* and *L'Ardent* deleted 7 January 1980. *Le Fringant* to be paid off late 1981.

Radar: One Decca.

Sonar: One OCU2.

Similar ships: One in Yugoslavia, one in Tunisia.

LE FRINGANT *1978, Michael D. J. Lennon*

4 Ex-CANADIAN "LA DUNKERQUOISE" CLASS
(LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
LA LORIENTAISE (ex-HMCS *Miramichi*)	P 652	St John D.D.	13 Nov 1954
LA DUNKERQUOISE (ex-HMCS *Fundy*)	P 653	St John D.D.	21 May 1954
LA DIEPPOISE (ex-HMCS *Chaleur*)	P 655	P. Arthur S.Y.	13 Nov 1954
LA PAIMPOLAISE (ex-HMCS *Thunder*)	P 657	Vickers	21 May 1954

Displacement, tons: 370 full load; 470 standard
Dimensions, feet (metres): 164 × 30·2 × 9·2 *(50 × 9·2 × 2·8)*
Gun: 1—40 mm
Main engines: General Motors diesels; 2 shafts; 2 500 bhp = 15 knots
Oil fuel, tons: 52
Range, miles: 4 500 at 11 knots
Complement: 35 (4 officers, 31 men)

La Paimpolaise (launched 17 July 1953) transferred to the French flag at Halifax on 1 April 1954, *La Dunkerquoise* (launched 17 July 1953) on 30 April 1954, and *La Dieppoise* (launched 21 June 1952) and *La Lorientaise* (launched in 1953) on 10 October 1954. All similar to the "Bay" class in the Canadian Forces. All transferred from minesweeping to overseas patrol operations 1973. They have been air-conditioned and all are stationed in the Pacific.

LA DUNKERQUOISE *11/1978, Ron Wright*

1 SPECIAL TYPE DB 1

Name	*No.*	*Builders*	*Commissioned*
MERCURE	P 765	Mecaniques de Normandie	20 Dec 1958

Displacement, tons: 315 light; 345 normal; 375 full load
Dimensions, feet (metres): 145·5 × 27 × 8·5 *(44·4 × 8·3 × 4)*
Guns: 2—20 mm
Main engines: 2 MGO diesels; 2 shafts; 2 500 bhp = 14 knots
Oil fuel, tons: 48
Range, miles: 6 200 at 10 knots
Complement: 37 (5 officers, 32 men)

Ordered in France under the "off-shore" programme. Laid down in January 1955. Launched on 21 December 1957. Fitted as fishery protection vessel 1979-80 with new diesels, extra deckhouses, rescue equipment—all MS gear removed. Trials 25 July 1980.

Foreign sales: Six built for West Germany which were later transferred to Turkey.

MERCURE (old number) *1968, French Navy*

1 COASTAL PATROL CRAFT

TOURMALINE A 714

Displacement, tons: 45
Dimensions, feet (metres): 88 × 16·8 × 4·8 *(26·8 × 5·1 × 1·5)*
Gun: 1—20 mm
Main engines: 2 diesels; 1 120 hp = 27 knots
Complement: 9

Commissioned 14 February 1974. Built by Chantiers Navals de L'Esterel for training duties.

TOURMALINE *5/1980, Marius Bar*

PUBLIC SERVICE FORCE
(FORCE DE SURFACE A MISSIONS CIVILES—FSMC)

This new designation is applied to a programme of 11 ships and craft designed for offshore and coastal patrol, fishery protection, maritime traffic surveillance, anti-pollution duties and search and rescue, all being manned by the navy.
The present plan is for:
(a) Two offshore patrol vessels of 2 020 tons with two diesels capable of 23 knots with a Dauphin helicopter, one 40 mm, two 20 mm—first to be built 1983-85, second 1984-86.
(b) One 1 500 ton trawler type for EEZ patrols at home or abroad. To be built 1981-82.
(c) Four vessels of 900 tons and 16 knots specially designed to deal with marine disasters and oil pollution. To be built at yearly intervals, first 1982-83.
(d) Four 380 ton vessels of 20 knots, first to be built 1981-82, next pair 1982-83 and fourth 1983-84.
Eventual deployment to be—four in tropical overseas territories, one (1 500-ton trawler) for "terres australes" (?Kerguelen) and six in home waters.

Name	*No.*	*Builders*	*Commissioned*
STERNE	P 680	La Perriére, Lorient	18 July 1980

Displacement, tons: 380 full load
Dimensions, feet (metres): 160·7 × 24·6 × 9·2 *(49 × 7·5 × 2·8)*
Guns: 2—12·7 mm
Main engines: 2 SCAM diesels; 4 200 hp; 2 shafts = 20 knots
Auxiliary propulsion: Electro-hydraulic on starboard shaft; 150 hp = 6 knots
Range, miles: 4 900 at 12 knots; 1 500 at 20 knots
Complement: 16 (Accommodation for 23)

First ship for the FSMC Has active tank stabilisation.

STERNE

MINE WARFARE FORCES

1 + 7 + (2) "ERIDAN" ("TRIPARTITE") CLASS (MINEHUNTERS)

Name	*No.*	*Laid down*	*Launched*	*Commissioned*
ERIDAN	M 641	20 Dec 1977	2 Feb 1979	1981
—	M 642	—	23 Jan 1980	1981

Displacement, tons: 510 standard; 544 full load
Dimensions, feet (metres): 161 × 29·2 × 8·2 *(49·1 × 8·9 × 2·5)*
Gun: 1—20mm
Minehunting: 2 PAP systems
Minesweeping: Mechanical sweep gear
Main engines: 1 Werkspoor diesel; 1 shaft (single anti-clockwise cp screw by Lips); 2 280 bhp: 2 active rudders
Auxiliary propulsion: 2—88 kW motors = 7 knots; Bow thruster
Speed, knots: 15
Range, miles: 3 000 at 12 knots
Complement: 22 to 45 (see note)

First two building in Lorient.
Belgium and the Netherlands have agreed to build 15 (ten in Belgium with option on five more) and France ten of this design. Each country has a joint bureau de programme in Paris and will build its own GRP hulls to a central design. Belgium will provide all the electrical installations, France all the minehunting gear and some electronics and the Netherlands the propulsion systems.
The second and third ships ordered 28 April 1978 and two more on 25 April 1979.
Two more ordered June 1980 and the eighth ordered in 1981. Conflicting reports suggest that the full fifteen hulls may yet be ordered.

Complement: For simple tasks a crew of 22 will be adequate, increasing to 45 for major minehunting operations.

Electronics and navigation: Auto pilot and hovering; automatic radar navigation; navigation aids by Loran and Syledis; Evec data system.

Preliminary cruise: *Eridan* 1981, No 2 late 1981, No 3 early 1982, No 4 late 1982, No 5 late 1983.

Radar: One Decca 1229.

Sonar: One DUBM 21A.

Tasks: Minehunting, minesweeping, patrol, training, directing ship for unmanned mine sweeping, HQ ship for diving operations and pollution control. Pre-packed 5 ton modules of equipment to be embarked for separate tasks.

"ERIDAN" Class *1979, French Navy*

5 "CIRCÉ" CLASS (MINEHUNTERS)

Name	No.	Builders	Commissioned
CYBÈLE	M 712	C.M. de Normandie	28 Sep 1972
CALLIOPE	M 713	C.M. de Normandie	28 Sep 1972
CLIO	M 714	C.M. de Normandie	18 May 1972
CIRCÉ	M 715	C.M. de Normandie	18 May 1972
CERES	M 716	C.M. de Normandie	8 Mar 1973

Displacement, tons: 460 standard; 495 normal; 510 full load
Dimensions, feet (metres): 167 × 29·2 × 11·15 *(50·9 × 8·9 × 3·4)*
Gun: 1—20 mm
Main engines: 1 MTU diesel; single axial screw; 1 800 bhp = 15 knots (2 active rudders)
Range, miles: 3 000 at 12 knots
Complement: 48 (4 officers, 44 men)

Ordered in 1968. *Circé* launched 15 December 1970; *Clio* launched 10 June 1971; *Calliope* launched 21 November 1971; *Cybèle* launched January 1972; *Ceres* launched 10 August 1972.

Minehunting: All ships are fitted with DUBM 20 minehunting sonar. The 9 ft *(2·74 m)* long PAP is propelled by two electric motors at 6 knots and is wire-guided to a maximum range of 500 metres. Fitted with a television camera, this machine detects the mine and lays its 100 kgm charge nearby. This is then detonated by an ultra-sonic signal.

Minesweeping: These ships carry no normal minesweeping equipment.

CLIO *8/1979, Ron Wright*

10 Ex-US "AGGRESSIVE" CLASS (MINEHUNTERS)

OUISTREHAM (ex-*MSO 513*) M 610
ALENÇON (ex-*MSO 453*) M 612
BERNEVAL (ex-*MSO 450*) M 613
CANTHO (ex-*MSO 476*) M 615
DOMPAIRE (ex-*MSO 454*) M 616
GARIGLIANO (ex-*MSO 452*) M 617
MYTHO (ex-*MSO 475*) M 618
VINH LONG (ex-*MSO 477*) M 619
BERLAIMONT (ex-*MSO 500*) M 620
BACCARAT (ex-*MSO 505*) M 623

Displacement, tons: 700 standard; 780 full load
Dimensions, feet (metres): 172 × 36 × 13·6 *(52·4 × 11 × 4·1)*
Gun: 1—40 mm
Main engines: 2 General Motors diesels; 2 shafts; vp propellers; 1 600 bhp = 13·5 knots
Oil fuel, tons: 47
Range, miles: 3 000 at 10 knots
Complement: 58 (5 officers, 53 men)

The USA transferred these MSOs to France in three batches during 1953. *Bir Hacheim* M 614 (ex-MSO 451) was returned to the US Navy at Brest on 4 September 1970 and transferred to Uruguayan navy, being renamed *Maldonado*. *Origny* converted for survey duties in 1960.

Commissioning dates: *Ouistreham* 7 Mar 1957, *Alençon* 1 Jan 1955, *Berneval* 30 Aug 1954, *Cantho* 14 Oct 1955, *Dompaire* 21 May 1955, *Garigliano* 30 Oct 1954, *Mytho* 21 May 1955, *Vinh Long* 14 Oct 1955, *Berlaimont* 2 Sep 1956, *Baccarat* 13 Nov 1956.

Minehunters: *Cantho, Dompaire, Garigliano, Mytho* and *Vinh Long* converted for minehunting between 1975 and 1979. *Dompaire* commissioned as minehunter 14 April 1977, *Mytho* on 7 April 1978, *Vinh Long* on 10 April 1978 and *Garigliano* 13 July 1979. *Baccarat, Berlaimont, Alençon, Berneval* and *Ouistreham* being converted to complete by 1981-82. Considerable change in appearance results. PAP 104 fitted; some minesweeping capability retained.

Sonar: DUBM 21.

DOMPAIRE *6/1980, J. L. M. van der Burgh*

5 "SIRIUS" CLASS (MINESWEEPERS—COASTAL)

CAPRICORNE (11 July 1958) M 737
PHÉNIX (21 Dec 1956) M 749
CAPELLA (1 May 1956) M 755
CÉPHÉE (11 June 1956) M 756
VERSEAU (10 Sep 1956) M 757

Displacement, tons: 400 standard; 440 full load
Dimensions, feet (metres): 152 × 28 × 8·2 *(46·4 × 8·6 × 2·5)*
Guns: 1—40 mm Bofors; 1—20 mm Oerlikon (several have only 1 or 2—20 mm)
Main engines: SEMT-Pielstick 16-cyl diesels; 2 shafts; 2 000 bhp = 15 knots (11·5 knots when sweeping)
Oil fuel, tons: 48
Range, miles: 3 000 at 10 knots
Complement: 38 (3 officers, 35 men)

Of wooden and aluminium alloy construction. Of same general characteristics as the British "Ton" class. Commissioning dates above. Built by CMN, Cherbourg.

Class: *Bételgeuse* employed as experimental ship since May 1977 (A 747).

Transfers: Three of this class, built in France and originally numbered D 25, 26 and 27 (now called *Hrabri, Smeli* and *Slobodni*), were joined by *Snazni* (built in Yugoslavia) after their transfer to Yugoslavia in 1957. *Fomalhaut, Orion, Pollux* and *Procyon* were returned to the US Navy in 1970, *Achernar* and *Centaure* in 1971. *Aries* (M 758) loaned to Morocco in 1974.

CÉPHÉE *2/1980, Michael D. J. Lennon*

12 Ex-US "ADJUTANT" CLASS (MINESWEEPERS—COASTAL)

PIVOINE (ex-*MSC 125*) M 633
RÉSÉDA (ex-*MSC 126*) M 635*
ACACIA (ex-*MSC 69*) M 638*
ACANTHE (ex-*MSC 70*) M 639
AZALÉE (ex-*MSC 67*) M 668*
CYCLAMEN (ex-*MSC 119*) M 674*
EGLANTINE (ex-*MSC 117*) M 675*
GLYCINE (ex-*MSC 118*) M 679
LILAS (ex-*MSC 93*) M 682
LOBÉLIA (ex-*MSC 96*) M 684*
MIMOSA (ex-*MSC 99*) M 687
MUGUET (ex-*MSC 97*) M 688

*See *Status* note

Displacement, tons: 375 full load
Dimensions, feet (metres): 144 × 27 × 8·3 *(43·8 × 8·2 × 2·5)*
Gun: 1—20 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 200 bhp = 13 knots (8 sweeping)
Oil fuel, tons: 40
Range, miles: 2 500 at 10 knots
Complement: 38 (3 officers, 35 men)

The USA agreed in September 1952 to allocate to France in 1953, 36 new AMS (later redesignated MSC) under the Mutual Defence Assistance Programme, but only 30 were finally transferred to France in 1953.

Commissioning dates: *Acacia* 14 June 1953, *Acanthe* 9 October 1953, *Azalée* 9 October 1953, *Cyclamen* 21 May 1954, *Eglantine* 30 August 1954, *Glycine* 30 October 1954, *Lilas* 8 July 1954, *Lobélia* 1 January 1955, *Mimosa* 21 May 1955, *Muguet* 1 January 1955.

Status: *Camelia* (27 June 1980), *Laurier* (1 November 1980) and *Pervenche* (November 1980) to réserve speciale. *Muguet* and *Acanthe* to follow in late 1981.

Transfers:
(a) Six of the class were not taken up by France—two (MSC 139 and 143) to Spain; two to Japan (MSC 95, 144) and two retained by USA.
(b) *Marguerite* (ex-*MSC 94*) M 686 returned to USA and transferred to Uruguay as *Rio Negro* 10 November 1969.
(c) *Pavot* (ex-*MSC 124*) M 631 and *Renoncule* (ex-*MSC 142*) M 634 returned to USA and transferred to Turkey on 24 March 1970 and 19 November 1970 respectively.
(d) *Coquelicot* (ex-*MSC 84*) M 673 to Tunisia in 1973.
(e) *Bégonia* (ex-*MSC 83*) M 669 and *Glaieul* (ex-*MSC 120*) M 678 returned to USA 1974.
(f) *Marjolaine* to Tunisia 26 July 1977.

Change of task:
(a) *Ajonc* (ex-*M 667*) A 701 to diving training ship in 1974.
(b) *Magnolia* M 685, *Liseron* (ex-*M 683*) A 723 and *Gardénia* (ex-*M 676*) A 711 to clearance-diving base ship.
(c) *Jacinthe* M 680 to minelaying duties in 1968.
(d) *Acacia* M 638, *Azalée* M 668, *Lobélia* M 684, *Cyclamen* M 674, *Eglantine* M 675 and *Réséda* M 635 to reserve and no longer maintained in anti-magnetic state.

RESEDA *5/1979, Wright and Logan*

1 Ex-BRITISH "HAM" CLASS (DAN—LAYER)

Name	*No.*	*Builders*	*Commissioned*
PETUNIA	P 662	McLean, Renfrew	25 Nov 1955

Details under similar ships of class in Gendarmerie Maritime at end of section. Now operated as "patrouilleur baliseur".

PETUNIA *9/1980, J. L. M. van der Burgh*

OCEANOGRAPHIC AND SURVEY SHIPS

Note: (a) These ships are painted white.
(b) A total of 20 officers and 74 technicians with oceanographic and hydrographic training is employed in addition to the ships' companies listed here. They occupy the extra billets marked as "scientists".
(c) Funds provided in 1981 budget for a new survey ship.

Name	*No.*	*Builders*	*Commissioned*
D'ENTRECASTEAUX	A 757	Brest Naval Dockyard	10 Oct 1970

Displacement, tons: 2 400 full load
Dimensions, feet (metres): 292 × 42·7 × 14·4 *(89 × 13 × 4·4)*
Main engines: 2 diesel-electric; 2 720 shp; 2 cp propellers = 15 knots
Auxiliary engines: 2 Schottel trainable and retractable
Aircraft: 1 helicopter
Range, miles: 10 000 at 12 knots
Complement: 79 (6 officers, 73 men plus 38 scientific staff)

This ship was specially designed for oceanographic surveys capable of working to 6 000 m. Hangar for Alouette II helicopter. Carries one LCPS and three survey launches.

Radar: Two sets.

Sonar: Two sets.

D'ENTRECASTEAUX *11/1979, Marius Bar*

Name	*No.*	*Builders*	*Commissioned*
ESPÉRANCE (ex-*Jacques Coeur*)	A 756	Gdynia	see note
ESTAFETTE (ex-*Jacques Cartier*)	A 766	Gdynia	see note

Displacement, tons: 956 standard; 1 360 full load
Dimensions, feet (metres): 208·3 × 32·1 × 19·4 *(63·5 × 9·8 × 5·9)*
Main engines: MAN diesels; 1 850 bhp = 15 knots
Range, miles: 7 500 at 13 knots
Complement: 32 (3 officers, 29 men plus scientists)

Former trawlers built in 1962 at Gdynia and purchased in 1968-69. Adapted as survey ships commissioned on 12 July 1969 and 16 November 1972 respectively. Can carry 14 scientists.

ESPÉRANCE *11/1978, Wright and Logan*

Name	*No.*	*Builders*	*Commissioned*
LA RECHERCHE (ex-*Guyane*)	A 758	Chantiers Ziegler, Dunkirk	see note

Displacement, tons: 810 standard; 910 full load
Dimensions, feet (metres): 221·5 × 34·2 × 13 *(67·5 × 10·4 × 4·5)*
Main engine: 1 Werkspoor diesel; 1 535 bhp = 13·5 knots
Range, miles: 3 100 at 10 knots
Complement: 23 (2 officers, 21 men) (plus 43 scientists)

Former passenger motor vessel. Launched in April 1951. Purchased in 1960 and converted by Cherbourg Dockyard into a surveying ship. Commissioned into the French Navy on 19 March 1962 and her name changed from *Guyane* to *La Recherche*. To improve stability she was fitted with bulges. Now comes under the Ministry for Overseas Affairs.

LA RECHERCHE *1975, Dr. Giorgio Arra*

ORIGNY A 640

Displacement, tons: 700 standard; 780 full load
Dimensions, feet (metres): 172 × 36 × 13·6 *(52·4 × 11 × 4·1)*
Main engines: 2 General Motors diesels; 2 shafts; 1 600 bhp = 13·5 knots
Range, miles: 3 000 at 10 knots
Complement: 52

Commissioned 2 September 1956 as an ocean minesweeper of "Aggressive" class. Converted for Oceanographic research 1961-62.

ORIGNY *1974, Wright and Logan*

Name	*No.*	*Builders*	*Commissioned*
L'ASTROLABE	A 780	Chantiers de la Seine Maritime, Le Trait	1964
BOUSSOLE	A 781	Chantiers de la Seine Maritime, Le Trait	1964

Displacement, tons: 330 standard; 440 full load
Dimensions, feet (metres): 140 × 27·9 × 9·5 *(42·7 × 8·5 × 2·9)*
Guns: 2 MGs *(L'Astrolabe* only)
Main engines: 2 Baudoin DV.8 diesels; 1 shaft; vp propeller; 800 bhp = 13 knots
Range, miles: 4 000 at 12 knots
Complement: 33 (1 officer, 32 men)

Authorised under the 1961 Programme. Specially designed for surveys in tropical waters. Laid down in 1962, launched on 27 May and 11 April 1963 respectively. Each ship carries a crane on either side of the funnel and has two 4·5 ton wireless-equipped survey craft .

L'ASTROLABE *4/1979, Leo van Ginderen*

OCTANT (ex-*Michel Marie*) A 683

Displacement, tons: 128 standard; 133 full load
Dimensions, feet (metres): 78·7 × 20 × 10·5 *(24 × 6·1 × 3·2)*
Main engines: 2 diesels; 1 shaft; vp propeller; 200 bhp = 9 knots
Range, miles: 2 000 at 7 knots
Endurance: 12 days
Complement: 13 (1 officer, 12 men)

Small fishing trawler purchased by the Navy and converted into survey craft by the Constructions Mécaniques de Normandie at Cherbourg as tender to *La Recherche*. Wooden hull and steel upperworks. Conversion completed on 20 December 1962. Commissioned 11 April 1963. Rated as "batiment de surveillance de sites" based at Toulon.

OCTANT *6/1975, Dr. Giorgio Arra*

1 INSHORE SURVEY CRAFT

Name	*No.*	*Builders*	*Commissioned*
CORAIL	A 794	—	11 Apr 1975

Displacement, tons: 54·8 light
Dimensions, feet (metres): 58·4 × 16·1 × 5·9 *(17·8 × 4·9 × 1·8)*
Main engine: 1 Caterpillar diesel; 250 bhp = 10·3 knots
Complement: 7

The second ship of this name.

SERVICE FORCES

2 + 2 "DURANCE" CLASS
(UNDERWAY REPLENISHMENT TANKERS)

Name	*No.*	*Builders*	*Commissioned*
MEUSE	A 607	Brest Naval Dockyard	2 Oct 1980
DURANCE	A 629	Brest Naval Dockyard	1 Dec 1976
—	—	Brest Naval Dockyard	1983
—	—	Brest Naval Dockyard	1986

Displacement, tons: 17 800 full load
Dimensions, feet (metres): 515·9 × 69·5 × 28·5 *(157·3 × 21·2 × 8·7)*
Aircraft: 1 WG 13 Lynx helicopter
Guns: 2—40 mm
Main engines: 2 diesels SEMT-Pielstick 16 PC 2·5; 2 shafts; vp propellers 20 000 hp = 19 knots
Oil fuel, tons: 750
Range, miles: 9 000 at 15 knots
Complement: 150 (45 passengers)

Durance laid down 1973, launched 6 September 1975. Helicopter hangar. Classed as Pétrolier Ravitailleur d'Escadre (PRE). *Meuse* laid down 2 June 1977, launched 2 December 1978. Third ship, ordered in October 1977, was laid down 8 May 1979. *Meuse* carried out preliminary cruise starting 15 July 1980 (to Indian Ocean) and No 3 due in late 1982. No 4 ordered 1981.

Capacity: *Durance* can carry a total of 10 000 tonnes: 7 500 FFO, 1 500 diesel, 500 TR5 Avcat, 130 distilled water, 170 victuals, 150 munitions, 50 naval stores. *Meuse* carries 5 000 FFO, 3 200 diesel, 1 800 TR5 Avcat and the rest as in *Durance*.

Transfer: Four beam positions and one astern, two of the beam positions having heavy transfer capability.

MEUSE *7/1980, Marius Bar*

1 UNDERWAY REPLENISHMENT TANKER and COMMAND SHIP

Name	*No.*	*Builders*	*Commissioned*
LA CHARENTE (ex-*Beaufort*)	A 626	Holdens Mek Verksted, Tönsberg	1957

Displacement, tons: 7 440 light; 26 000 full load
Dimensions, feet (metres): 587·2 × 72 × 34·1 *(179 × 21·9 × 10·4)*
Guns: 4—40 mm
Main engine: 1 General Electric geared turbine; 1 shaft = 17·5 knots
Boilers: 2
Complement: 100 (6 officers, 94 men)

Former Norwegian tanker. Purchased by the French Navy in May 1964 and commissioned 6 June 1964. Now converted for service as flagship of the Flag Officer commanding Indian Ocean forces. Fitted with helicopter platform and hangar and carries LCVP. Stern transfer position.

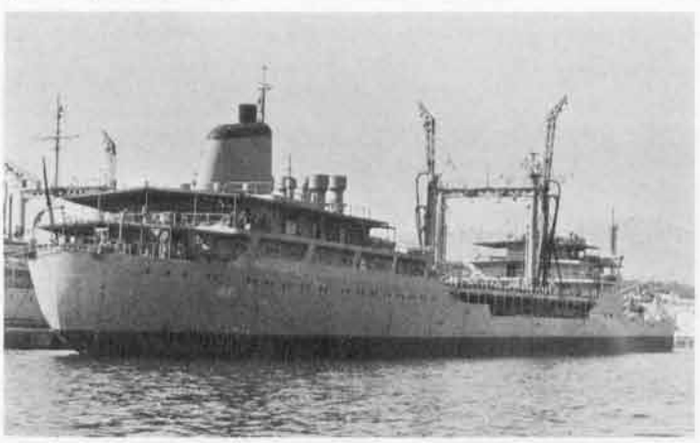
LA CHARENTE (after conversion) *1974, French Navy*

1 UNDERWAY REPLENISHMENT TANKER

Name	*No.*	*Builders*	*Commissioned*
ISÈRE (ex-*La Mayenne*, ex-*Caltex Strasbourg*)	A 675	Ch. Seine Maritime	see note

Displacement, tons: 7 440 standard; 26 700 full load
Dimensions, feet (metres): 559 × 71·2 × 30·3 *(170·4 × 21·7 × 9·3)*
Main engine: 1 single geared Parsons turbine; 8 260 shp = 16 knots
Boilers: 2
Complement: 92 (6 officers, 86 men)

Launched on 22 June 1959. Former French tanker. Purchased in 1965 and commissioned 17 March 1965. Fitted for two beam fuelling positions as well as stern rig. Due for replacement by third ship of "Durance" class.



ISÈRE *8/1979, J. Y. Robert*

1 SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
ABER WRACH (ex-*CA 1*)	A 619	Cherbourg	27 Mar 1964

Displacement, tons: 1 220 standard; 3 500 full load
Dimensions, feet (metres): 284 × 40 × 19 *(86·6 × 12·2 × 5·8)*
Gun: 1—40 mm
Main engine: 1 diesel; vp propeller; 3 000 bhp = 12 knots
Range, miles: 5 000 at 12 knots
Complement: 48 (3 officers, 45 men)

Authorised in 1956. Ordered in 1959. Laid down in 1961. The after part with engine room was launched on 24 April 1963. The fore part was built on the vacated slip, launched and welded to the after part. Complete hull floated up on 21 November 1963. Carries white oil, lubricating oil and petrol—2 220 tons.

ABER WRACH *2/1978, Michael D. J. Lennon*

2 SUPPORT TANKERS

PAPENOO (ex-Norwegian *Bow Queen*) A 625
PUNARUU (ex-Norwegian *Bow Cecil*) A 632

Displacement, tons: 1 195 standard; 2 927 full load
Dimensions, feet (metres): 272·2 × 45·6 × 19 *(83 × 13·9 × 5·8)*
Main engines: 2 diesels; 1 vp screw; 2 050 hp = 12 knots (bow screw in addition)

Two small Norwegian built tankers added to the navy. Commissioned 9 and 16 November 1971 respectively. Capacity 2 500 cubic metres (ten tanks). Have replenishment at sea facility astern.

PUNARUU *1975, French Navy*

1 MAINTENANCE and REPAIR SHIP

Name	*No.*	*Builders*	*Commissioned*
JULES VERNE (ex-*Achéron*)	A 620	Brest Naval Dockyard	1 June 1976

Displacement, tons: 6 485 standard; 10 250 full load
Dimensions, feet (metres): 482·2 × 70·5 × 21·3 *(147 × 21·5 × 6·5)*
Aircraft: 2 helicopters
Guns: 2—40 mm
Main engines: 2 diesels SEMT-Pielstick; 1 shaft; 21 500 hp = 18 knots
Range, miles: 9 500 at 18 knots
Complement: 323 (20 officers, 303 men)

Ordered in 1961 budget, originally as an Armament Supply Ship. Role and design changed whilst building—now rated as Engineering and Electrical Maintenance Ship. Launched 30 May 1970. Currently serving in Indian Ocean. Carries stocks of torpedoes and ammunition.

JULES VERNE *3/1976, J. van der Woude*

5 "RHIN" CLASS (DEPOT SHIPS)

Name	*No.*	*Builders*	*Commissioned*
LOIRE	A 615	Lorient Naval Dockyard	10 Oct 1967
GARONNE	A 617	Lorient Naval Dockyard	1 Sep 1965
RANCE	A 618	Lorient Naval Dockyard	5 Feb 1966
RHIN	A 621	Lorient Naval Dockyard	1 Mar 1964
RHÔNE	A 622	Lorient Naval Dockyard	1 Dec 1964

Displacement, tons: 2 075 standard; 2 445 full load *(Rhin, Rance* and *Rhône)*
2 320 standard *(Garonne and Loire)*
Dimensions, feet (metres): 331·5 × 43 × 12·1 *(101·1 × 13·1 × 3·7)*
Aircraft: 1 to 3 Alouette helicopters (except *Garonne* and *Loire*)
Guns: 3—40 mm; (1—40 mm; 2—20 mm *Garonne*) (none in *Rance*)
Landing craft: 2 LCP
Main engines: 2 SEMT-Pielstick diesels (16PA2V in *Rhin* and *Rhône*, 12PA4 in *Rance, Loire* and *Garonne*); 1 shaft; 3 300 bhp = 16·5 knots
Range, miles: 13 000 at 13 knots
Complement: *Rhin* and *Rhône* 148 (6 officers, 142 men); *Rance* 150 (10 officers, 140 men) and about 118 passengers; *Garonne* 221 (10 officers, 211 men); *Loire* 140 (9 officers, 131 men)

Designed for supporting various classes of ships. Have a 5 ton crane, carry two LCPs and have a helicopter platform (except *Garonne*). *Rhin* has a hangar and carries an Alouette helicopter. *Rance* carries three in her hangar. *Garonne* is designed as a Repair Workshop, *Loire* for minesweeper support, *Rance* for laboratory and radiological experimental services, *Rhin* for electronic maintenance and *Rhône* for submarines.
Rance is currently flagship of Centre d'Entrainement de la Flotte.

Radar: One DRBV 50; DRBV 23C in *Rance* in addition.

RANCE *6/1980, Marius Bar*

LOIRE (RHIN and RHÔNE similar) *6/1980, J. L. M. van der Burgh*

GARONNE *9/1979, Wright and Logan*

1 SUPPLY VESSEL

TAPATAI (ex-*Silver Fish*)

Of 240 tons, built in 1971. Bought 1979/80 for service in the Pacific. Tug type.

1 HARBOUR WATER BOAT

FORMÈNE

5 SUPPLY TENDERS

Name	*No.*	*Builders*	*Commissioned*
CHAMOIS	A 767	La Perrière, Lorient	24 Sep 1976
ELAN	A 768	La Perrière, Lorient	7 Apr 1978
CHEVREUIL	A 774	La Perrière, Lorient	7 Oct 1977
GAZELLE	A 775	La Perrière, Lorient	13 Jan 1978
ISARD	A 776	La Perrière, Lorient	15 Dec 1978

Displacement, tons: 495 full load
Dimensions, feet (metres): 136·1 × 24·6 × 10·5 *(41·5 × 7·5 × 3·2)*
Main engines: 2 diesels SACM AGO V-16; 2 vp propellers; 2 200 hp = 15 knots
Complement: 10 (10 spare berths)

Similar to the standard FISH oil rig support ships. Can act as tugs, oil pollution vessels, salvage craft (two 30 ton and two 5 ton winches), coastal and harbour controlled minelaying, torpedo recovery, diving tenders and a variety of other tasks. Bow thruster of 80 hp and twin rudders. Can carry 100 tons of stores on deck or 125 tons of fuel and 40 tons of water or 65 tons of fuel and 120 tons of water. Four more planned. *Isard* serves as a special diving support ship.
Elan laid down 16 March 1977, launched 28 July 1977; *Chevreuil* laid down 15 September 1976, launched 4 March 1977; *Gazelle* laid down 30 December 1976, launched 7 June 1977; *Isard* laid down 2 November 1977, launched 2 May 1978.

CHEVREUIL *6/1980, Marius Bar*

ISARD *2/1979, Marius Bar*

TRIALS/RESEARCH SHIPS

Name	*No.*	*Builders*	*Commissioned*
HENRI POINCARE (ex-*Maina Marasso*)	A 603	Cantieri Riuniti de Adriaticos, Monfalcone	1 Mar 1968

Displacement, tons: 24 000 full load
Dimensions, feet (metres): 590·6 × 72·8 × 28·9 *(180 × 22·2 × 9·4)*
Guns: 2—20 mm
Main engine: 1 Parsons geared turbine; 1 shaft; 10 000 shp = 15 knots
Boilers: 2 Foster-Wheeler high pressure water tube
Range, miles: 11 800 at 13·5 knots
Complement: 214 + 9 (11 officers, 9 civilians, 203 men)

Launched in October 1960. Former Italian tanker. Purchased in September 1964. Converted in Brest dockyard from 1 October 1964 to 1967. To work with the experimental guided missile station in the Landes (South-west France). Named after the mathematician and scientist.

Aircraft: Can land heavy helicopters and has space for two large or five light helicopters in her hangar.

Operations: She is primarily a missile-range-ship and acts as Flagship of Force M, the trials squadron of the French Navy. To enable her to plot the trajectory etc of missiles fired from land or sea she is equipped with three tracking radars, a telemetry station, transit navigational aid, cinetheodolite, infra-red tracking as well as an up-to-date fit of hull-mounted sonar, meteorological and oceanographic equipment.

Radar: One Savoie; two Bearn; one DRBV 22D.

HENRI POINCARÉ *7/1976, Michael D. J. Lennon*

ILE D'OLERON (ex-*Munchen*, ex-*Mur*) A 610

Displacement, tons: 5 500 standard; 6 500 full load
Dimensions, feet (metres): 378 × 50 × 21·3 *(115·2 × 15·2 × 6·5)*
Main engines: MAN 6-cyl diesels; 1 shaft; 3 500 bhp
Speed, knots: 14·5
Oil fuel, tons: 340
Range, miles: 7 200 at 12 knots
Complement: 195 (12 officers, 183 men)

Launched in Germany in 1939. Taken as a war prize. Commissioned in French Navy 29 August 1945. Formerly rated as a transport. Converted to experimental guided missile ship in 1957-58 by Chantiers de Provence and l'Arsenal de Toulon. Commissioned early in 1959. Equipped with stabilisers.

Experimental: When converted, was designed for experiments with two launchers for ship-to-air missiles, the medium range Masurca and the long range Masalca, and one launcher for ship-to-shore missiles, the Malaface. Latterly fitted with one launcher for target planes. Fitted for trials on MM 38 Exocet and for Crotale trials from 1977. Trials of MM 40 began in February 1980.

Radar: One DRBV 22C; one DRBV 50; one DRBI 10.
The missile system tracking radar operates in G band.

ILE D'OLÉRON *1978, L. and L. van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
AUNIS (ex-*Regina Pacis*)	A 643	Roland Werft, Bremen	see note

Displacement, tons: 2 900 full load
Dimensions, feet (metres): 283·8 × 38 × 15 *(86·5 × 11·6 × 4·6)*
Main engines: MAN diesels geared to 1 shaft; 2 400 bhp = 13 knots
Range, miles: 4 500 at 12 knots

Launched on 3 July 1956. Purchased in November 1966 from Scotto Ambrosino & Pugliese. Commissioned 23 November 1966. Converted in Toulon 1972-73. Employed as trials ship in Operation Cormoran with deep sonar (CAS) from 1973-77 and from 1978 on with new types of sonar.

AUNIS *3/1979, Marius Bar*

Name	*No.*	*Builders*	*Commissioned*
BERRY (ex-M/S *Médoc*)	A 644	Roland Werft, Bremen	see note

Displacement, tons: 1 148 standard; 2 700 full load
Dimensions, feet (metres): 284·5 × 38 × 15 *(86·7 × 11·6 × 4·6)*
Main engines: 2 MWM diesels geared to one shaft; 2 400 bhp = 13 knots
Range, miles: 7 000 at 15 knots

Launched on 10 May 1958. Purchased in October 1964. Commissioned 26 November 1964 and refitted in 1964-66. In 1976-77 converted at Toulon from victualling stores ship to Mediterranean electronic trials ship. Recommissioned February 1977.

BERRY *9/1979, J. Y. Robert*

Name	*No.*	*Builders*	*Commissioned*
L'AGENAIS	A 784 (ex-F 774)	Lorient Naval Dockyard	14 May 1958

Details under Type E 52 in Frigate section with after 57 mm mounting removed and fitted with VDS. Used as ASW trials ship since 1979 for linear passive sonar (Flute ETBF).

L'AGENAIS *4/1979, Marius Bar*

Name	*No.*	*Builders*	*Commissioned*
NARVIK (ex-MSO 512)	A 769 (ex-M 609)	USA	3 Feb 1957

Details under ex-US "Aggressive" class in Mine Warfare section. Conversion completed 1 January 1976 to trials ships for AP4 sweep and lenticular sonar, working with CETIEGM.

NARVIK *12/1980, L. and L. van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
BÈTELGEUSE	A 747 (ex-M 747)	CMN, Cherbourg	22 Aug 1955

Details under "Sirius" class in Mine Warfare section. Acts as trials ship for DUBM 41 sonar.

BÈTELGEUSE *11/1980, L. and L. van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
TRITON	A 646	Lorient	20 Jan 1972

Displacement, tons: 1 410 standard; 1 510 full load
Dimensions, feet (metres): 242·7 × 38·9 × 12 *(74 × 11·8 × 3·7)*
Main engines: 2 MGO V diesels driving a Voith Schneider screw aft; 2 electric motors driving a Voith Schneider fwd
Speed, knots: 13
Range, miles: 4 000 at 13 knots
Complement: 65 (4 officers, 44 men + 5 officers and 12 men for diving)

Under sea recovery and trials ship. Equipped with a helicopter platform. Launched on 7 March 1970. Support ship for the two-man submarine *Griffon*. Painted white.

Operations: Operated by Groupe d'Intervention sous la Mer (GISMER) for trials of submarines and deep-sea diving equipment. Underwater TV, recompression chamber, four-man diving bell of 13·5 tons and laboratories are fitted. Available as submarine rescue ship. Also carries a number of diving saucers.

Radar: Navigational.

Sonar: Special equipment for deep operations.

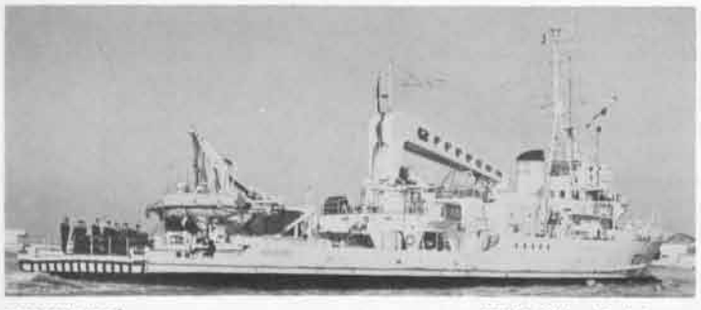
Submarine: The submarine *Griffon* is carried amidships on the starboard side of *Triton*. She is 25 ft *(7·8 m)* long, displaces 16 tons and is driven by an electric motor. Her diving depth is 2 000 ft *(600 m)* and her endurance 24 miles at 4 knots. Can be used for deep recovery operations. Fitted with manipulating arm.

TRITON (with *Griffon* amidships) *6/1975, Dr. Giorgio Arra*

Name	*No.*	*Builders*	*Commissioned*
GUSTAVE ZEDÉ (ex-*Marcel Le Bihan*, ex-*Greif*)	A 759	Stettiner Oderwerke AG	1937

Displacement, tons: 890 standard; 1 250 full load
Dimensions, feet (metres): 236·2 × 34·8 × 10·5 *(72 × 10·6 × 3·2)*
Guns: 4—20 mm (twins)
Main engines: 2 General Motors diesels; 2 shafts; 4 400 bhp = 18 knots
Range, miles: 2 500 at 13 knots
Complement: 50 (3 officers, 47 men), accommodation for 22 extra hands

Former German aircraft tender. Launched in 1936. Transferred by USA in February 1948. A 4·1-in gun and two 40 mm removed. Tender for DSV *Archimède*. Renamed 1977 to avoid confusion with Type A 69 frigate.



GUSTAVE ZEDÉ *3/1978, Michael D. J. Lennon*

1 ASW TRIALS SHIP

Name	*No.*	*Builders*	*Commissioned*
DENTI	A 743	DCAN Toulon	15 July 1976

Displacement, tons: 160
Dimensions, feet (metres): 113·8 × 21·6 × 7·5 *(34·7 × 6·6 × 2·3)*
Main engines: 2 Baudoin DP8 diesels; 960 hp = 12 knots
Range, miles: 800

Launched 7 October 1975.

DENTI *8/1979, L. and L. van Ginderen*

1 ARCHAEOLOGICAL RESEARCH CRAFT

L'ARCHÉONAUTE A 789

Built by Auroux, Arcachon August 1967. 120 tons full load and 96 ft *(29·3 m)* long with two Baudoin diesels; 600 hp; twin vp propellers; 12 knots. For underwater archaeological research carries a complement of two officers, four men, three archaeologists and six divers.

L'ARCHÉONAUTE *1975, Wright and Logan*

1 RADIOLOGICAL RESEARCH CRAFT

PALANGRIN Y 743

Acquired 1969. Of 44 tons with single diesel of 220 hp.

BOOM AND MOORING VESSELS

Name	*No.*	*Builders*	*Commissioned*
LA PRUDENTE	Y 749	AC Manche	27 July 1969
LA PERSÉVÉRANTE	Y 750	AC La Rochelle	3 Mar 1969
LA FIDÈLE	Y 751	AC Manche	10 June 1969

Displacement, tons: 446 standard; 626 full load
Dimensions, feet (metres): 142·8 × 32·8 × 9·2 *(43·5 × 10 × 2·8)*
Main engines: 2 Baudoin diesels; diesel-electric; 1 shaft; 620 bhp = 10 knots
Range, miles: 4 000 at 10 knots
Complement: 30 (1 officer, 29 men)

Net layers and tenders. Launched on 26 August 1968 *(La Fidèle)*, 14 May 1968 *(La Persévérante)* and 13 May 1968 *(La Prudente)*. A 25 ton lift.

LA PERSÉVÉRANTE *10/1980, J. Y. Robert*

Name	*No.*	*Builders*	*Commissioned*
TIANÉE	A 731	Brest	8 July 1975

Displacement, tons: 842 standard; 905 full load
Dimensions, feet (metres): 178·1 × 34·8 *(54·3 × 10·6)*
Main engines: Diesel-electric; 2 diesels; 1 shaft = 12 knots
Range, miles: 5 200 at 12 knots
Complement: 37 (1 officer, 36 men)

Launched 17 November 1973. For service in the Pacific. Fitted with lateral screws in bow tunnel.

TIANÉE *1974, French Navy*

Name	*No.*	*Builders*	*Commissioned*
CIGALE	A 760	CN La Pallice	24 June 1955
CRIQUET	A 761	AC Seine Maritime	25 Mar 1955
FOURMI	A 762	AC Seine Maritime	24 June 1955
GRILLON	A 763	Penhoët	25 Mar 1955
SCARABÉE	A 764	Penhoët	15 Feb 1955

Displacement, tons: 770 standard; 850 full load
Dimensions, feet (metres): 151·9 × 33·5 × 10·5 *(46·3 × 10·2 × 3·2)*
Guns: 1—40 mm Bofors; 4—20 mm (not all mounted in all ships)
Main engines: Two 4-stroke diesels, electric drive, 1 shaft; 1 600 bhp = 12 knots
Range, miles: 5 200 at 12 knots
Complement: 37 (1 officer, 36 men)

US off-shore order. Sister ship G 6 was allocated to Spain. *Criquet* was launched on 3 June 1954, *Cigale* on 23 September 1954, *Fourmi* on 6 July 1954, *Grillon* on 18 February 1954 and *Scarabée* on 21 November 1953.
Scarabée has square upper bridge.

CRIQUET *8/1979, L. and L. van Ginderen*

2 MOORING VESSELS

TUPA Y 667

292 tons with 210 hp diesel. Commissioned 16 March 1974.

CALMAR Y 688

270 tons full load with Baudoin diesel = 9·5 knots. Complement 11.
Converted for raising moorings. Commissioned 12 August 1970.

TORPEDO RECOVERY VESSELS

PÉLICAN (ex-*Kerfany*) A 699

Displacement, tons: 362 standard; 425 full load
Dimensions, feet (metres): 121·4 × 28 × 13·1 *(37 × 8·6 × 4)*
Torpedo tube: 1
Main engine: 1 Burmeister & Wain diesel; 1 shaft; 650 bhp = 11 knots
Complement: 19

Built in USA in 1951. Purchased in 1965 and converted from tunny fisher into torpedo recovery craft in 1966.

PÉLICAN *11/1975, Dr. Giorgio Arra*

PÉGASE

Catamaran TRV with two 440 hp diesels completed by SFCN in 1975.

SAMBRACITE

Built in 1974. Acts as TRV for ECAN St Tropez.

TRANSPORTS

9 SMALL TRANSPORTS

ARIEL Y 604
FAUNE Y 613
KORRIGAN Y 661
DRYADE Y 662
ALPHÉE Y 696
NEREIDE Y 700
ONDINE Y 701
NAIADE Y 702
ELFE Y 741

Displacement, tons: 195 standard; 225 full load
Dimensions, feet (metres): 132·8 × 24·5 × 10·8 *(40·5 × 7·5 × 3·3)*
Main engines: 2 MGO or Poyaud diesels; 2 shafts; 1 640 bhp/1 730 bhp = 15·3 knots
Range, miles: 940
Complement: 9

Ariel was launched on 27 April 1964, *Korrigan* on 6 March 1964, *Alphée* on 10 June 1969, *Elfe* on 14 April 1970, *Faune* on 8 September 1971, *Dryade* in 1973, *Nereide* on 17 February 1977 and *Naiade* 4 October 1979 (commissioned 15 January 1980). All built by Société Française de Construction Naval (ex-Franco-Belge) except for *Nereide, Ondine* and *Naiade* by DCAN Brest. Can carry 400 passengers (250 seated). *Naiade* based with CEM Toulon.

Appearance: *Ariel* has a pole mast, remainder have a faired structure.

ARIEL *8/1979, L. and L. van Ginderen*

5 SMALL TRANSPORTS

SYLPHE Y 710

Displacement, tons: 171 standard; 189 full load
Dimensions, feet (metres): 126·5 × 22·7 × 8·2 *(38·5 × 6·9 × 2·5)*
Main engine: 1 MGO diesel; 1 shaft; 833 bhp = 12 knots
Complement: 9

Small transport for passengers, built by Chantiers Franco-Belge in 1959-60. Based at Toulon.

TREBERON

Commissioned at Brest 26 November 1979.

MORGANE Y 671 **MERLIN** Y 735 **MÉLUSINE** Y 736

Displacement, tons: 170
Dimensions, feet (metres): 103·3 × 23·2 × 7·9 *(31·5 × 7·1 × 2·4)*
Main engines: 2 MGO diesels; 2 shafts; 940 bhp = 11 knots

Small transports for 400 passengers built by Chantiers Navals Franco-Belge at Chalon sur Saône *(Mélusine* and *Merlin)* and Ars. de Mourillon *(Morgane).* Laid down in December 1966 and accepted June 1968. Their home port is Toulon.

MERLIN *8/1979, L. and L. van Ginderen*

DIVING TENDERS

4 Ex-US "ADJUTANT" CLASS (MSCs)

AJONC (ex-*M 667*) A 701
GARDÉNIA (ex-*M 676*) A 711
LISERON (ex-*M683*) A 723
MAGNOLIA (ex-*M 685*) A 770

Details as in same class under Mine Warfare Forces except for removal of armament and sweep gear with complement now 11. *Ajonc* employed as diving training ship, remainder as clearance-diving base ships.

Commissioning dates: *Ajonc* 26 February 1954, *Gardénia* 30 August 1954, *Magnolia* 30 October 1954, *Liseron* 1 January 1955.

LISERON *9/1979, L. and L. van Ginderen*

TENDERS

7 Ex-BRITISH "HAM" CLASS (MSI)

MYOSOTIS (ex-M 788) A 710
HIBISCUS (ex-HMS *Sparham*, ex-M 785) A 735
DAHLIA (ex-HMS *Whippingham*, ex-M 786) A 736
TULIPE (ex-HMS *Frettenham*, ex-M 771) A 737
CAPUCINE (ex-HMS *Petersham*, ex-M 782) A 738
OEILLET (ex-HMS *Isham*, ex-M 774) A 739
HORTENSIA (ex-HMS *Mileham*, ex-M 783) A 740

Details as in same class under Gendarmerie Maritime at end of section. Now general purpose tenders.

HIBISCUS *3/1980, L. and L. van Ginderen*

JACINTHE A 680 (ex-M 680)

Minelaying tender with CETIEGM. Details in Mine Warfare Forces—"Adjutant" class.

JACINTHE *11/1980, L. and L. van Ginderen*

POSEIDON A 722

Displacement, tons: 220
Dimensions, feet (metres): 132·9 × 23·6 × 7·3 *(40·5 × 7·2 × 2·2)*
Main engine: 1 diesel; 600 bhp = 13 knots
Endurance: 8 days
Complement: 42

Base ship for assault swimmers. Completed 6 August 1975.

POSEIDON *1975, French Navy*

ATHOS A 712 **ARAMIS** A 713

Displacement, tons: 100 full load
Dimensions, feet (metres): 105·3 × 21·3 × 6·2 *(32·1 × 6·5 × 1·9)*
Guns: 1—20 mm; 2—12·7 mm MGs
Main engines: 2 SACM diesels; 4 400 hp = 32 knots
Range, miles: 1 500 at 15 knots
Complement: 12 plus 6 passengers

Built by Chantiers Navals de l'Esterel for Missile Trials Centre of Les Landes (CEL). Have large crane to handle missiles. Based at Bayonne, forming Groupe des Vedettes de l'Adour. *Athos* commissioned 14 March 1980—*Aramis* began trials 23 September 1980. Two more planned.

1 DEGAUSSING VESSEL

Y 732

Built in Lorient. Commissioned 3 March 1979. Based at Brest. Designated "Station de Démagnétisation No 3".

Y 732 *4/1979, Leo van Ginderen*

GIRELLE A 702

Patrol launch with twin davits aft.

TRAINING SHIPS

0 + 4 + 4 NEW CONSTRUCTION

BE 1-4

Displacement, tons: 463 full load
Dimensions, feet (metres): 141 × 26·9 × 10·5 *(43 × 8·2 × 3·2)*
Main engines: 2 SACM diesels; 2 200 shp; 2 shafts = 15 knots

Ordered December 1980—three from A. et. Ch. de la Manche, St Malo and the fourth from Ch. et A. de la Perrière. Further four provided for in 1981 budget.

NEW CONSTRUCTION

CHIMÈRE Y 706 **FARFADET** Y 711

Displacement, tons: 100
Main engine: 1 diesel; 200 hp = 11 knots

Auxiliary sail training ships built at Bayonne in 1971. Tenders to the Naval School.

LA GRANDE HERMINE (ex-*La Route Est Belle, ex-Ménestral*) A 653

Ex-sailing fishing boat built in 1932. Purchased in 1964 as the Navigation School (EOR) training ship. Length 46 ft *(14·02 m)*.

ENGAGEANTE (ex-*Cayolle*) A 772 **VIGILANTE** (ex-*Iseran*) A 773

Displacement, tons: 286
Dimensions, feet (metres): 98·4 × 22 × 12·5 *(30 × 6·7 × 3·8)*
Main engine: 1 Deutz diesel; 560 hp; 1 shaft = 11 knots

Ex-motor trawlers built by At. et Ch. de la Rochelle-Pallice in 1964. Bought in 1975 for conversion as training ships for the Petty Officers Navigation School. Decca radar.

L'ÉTOILE A 649 **LA BELLE POULE** A 650

Displacement, tons: 227
Dimensions, feet (metres): 105·9 × 22·9 × 10·5 *(32·3 × 7 × 3·2)*
Main engines: Sulzer diesels; 125 bhp = 6 knots

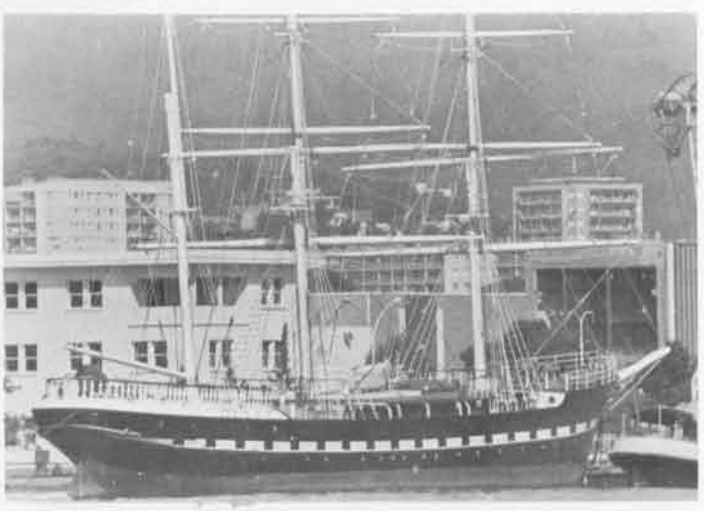
Auxiliary sail vessels. Built by Chantiers de Normandie (Fécamp) in 1932. Accommodation for three officers, 30 cadets, five petty officers, 12 men. Attached to Naval School.

MUTIN A 652

A 57 ton coastal tender built in 1927 by Chaffeteau, Les Sables. Auxiliary diesel and sails. Attached to the Navigation School.

BELEM

Of 600 tons and 196·8 ft *(60 m)* with two 270 hp Bolinder diesels. A three-masted ship purchased in August 1979 for l'Ecole Navale. Probably the oldest ship ever bought for the French Navy, having been built by Dubigeon at Chantenoy sur Loire and launched on 10 June 1896. Had previously passed through the hands of British aristocracy after an early career trading — Duke of Westminster and Earl of Iveagh *(Fantome II)*; sold to Italy as "Giorgio Cini" whence she was bought by France.



BELEM *8/1979, J. Y. Robert*

TUGS

OCEAN TUGS

MALABAR A 664 **TENACE** A 669 **CENTAURE** A 674

Displacement, tons: 1 080 light; 1 454 full load
Dimensions, feet (metres): 167·3 × 37·8 × 18·6 *(51 × 11·5 × 5·7)*
Main engines: 2 diesels; Kort engines 4 600 hp; 1 shaft = 15 knots
Range, miles: 9 500 at 15 knots
Complement: 42

Malabar and *Tenace* built by J. Oelkers, Hamburg, *Centaure* built at La Pallice.
Tenace commissioned 15 November 1973, *Centaure* on 15 November 1974 and *Malabar* on 7 October 1975.

TENACE *9/1980, L. and L. van Ginderen*

HIPPOPOTAME (ex-*Utrecht*) A 660

Displacement, tons: 534 standard; 860 full load
Main engines: Diesel-electric; 1 500 bhp = 13 knots

Hippopotame built as US Navy ATA of "Sotoyomo" class. Former Netherlands civilian ocean tug. Built in 1943. Purchased by the French Navy in January 1964 to be used at the Experimental Base in the Pacific. Commissioned in French Navy 5 March 1964.

ABEILLE NORMANDIE (Spare) **ABEILLE FLANDRES** (Brest)
ABEILLE PROVENCE (Toulon) **ABEILLE LANGUEDOC** (Cherbourg)

Civilian ocean tugs on charter 1979-82 of 3 458 tons and 17 knots, 23 000 hp, 160 ton bollard pull for *Flandres* and *Languedoc*—16 000 hp and 120 ton bollard pull for *Normandie* and *Provence*.

ABEILLE PROVENCE *9/1979, J. Y. Robert*

BELIER A 695 **BUFFLE** A 696 **BISON** A 697

Displacement, tons: 350
Dimensions, feet (metres): 104·9 × 28·9 × — *(32 × 8·8 × —)*
Main engine: 1 Voith-Schneider cycloidal; 2 600 hp

Built at Cherbourg. *Belier* launched December 1979, commissioned 10 July 1980, *Buffle* commissioned 19 July 1980, *Bison* launched November 1980.
A 25 ton bollard pull.

BUFFLE *7/1980, Marius Bar*

COASTAL TUGS

HERCULE A 667 (21 Mar 1960)
LE FORT A 671 (12 July 1971)
UTILE A 672 (8 Apr 1971)
LUTTEUR A 673 (19 July 1963)
ROBUSTE A 685 (4 Apr 1960)
ACTIF A 686 (11 July 1963)
LABORIEUX A 687 (14 Aug 1963)
VALEUREUX A 688 (17 Oct 1960)
TRAVAILLEUR A 692 (11 July 1963)
ACHARNE A 693 (5 July 1974)
EFFICACE A 694 (17 Oct 1974)
COURAGEUX A 706 (19 Aug 1960)

Displacement, tons: 230
Dimensions, feet (metres): 92 × 26 × 13 *(28·1 × 7·9 × 4)*
Main engine: 1 MGO diesel; 1 050 bhp = 11 knots
Range, miles: 2 400
Complement: 15

Commissioning dates in brackets.

HARBOUR TUGS

27 "105 TON" TYPE

Acajou Y601, *Balsa* Y607, *Bouleau* Y612, *Chataigner* Y620, *Charme* Y623, *Chene* Y624, *Cormier* Y629, *Equeurdreville* Y635, *Maronnier* Y638, *Frene* Y644, *Hêtre* Y654, *Hevea* Y655, *Latanier* Y663, *Manquier* Y666, *Meleze* Y668, *Merisier* Y669, *Okoume* Y682, *Paletuvier* Y686, *Pin* Y689, *Platana* Y695, *Sycomore* Y704, *Saule* Y708, *Ebène* Y717, *Erable* Y718, *Olivier* Y719, *Noyer* Y739, *Papayer* Y740.

Of 105 tons, 10 ton bollard pull with 700 bhp diesel and maximum speed of 11 knots.

2 "93 TON" TYPE

BONITE Y630 **ROUGET** Y634

Of 93 tons, 7 ton bollard pull with 380 bhp and maximum speed of 10 knots.

32 "56 TON" TYPE

Aigrette Y602, *Bengali* Y611, *Mouette* Y617, *Mesange* Y621, *Cigogne* Y625, *Colibri* Y628, *Cygne* Y632, *Martinet* Y636, *Fauvette* Y637, *Tourterelle* Y643, *Goeland* Y648, *Héron* Y653, *Merle* Y670, *Moineau* Y673, *Martin Pecheur* Y675, *Passereau* Y687, *Pingouin* Y690, *Pinson* Y691, *Pivert* Y694, *Santal* Y 720, *Alouette* Y721, *Vanneau* Y722, *Engoulevent* Y723, *Sarcelle* Y724, *Marabout* Y725, *Toucan* Y726, *Macreuse* Y727, *Grand Duc* Y728, *Eider* Y729, *Ara* Y730, *Loriot* Y747, *Gelinotte* Y748.

Of 56 tons, 3·5 ton bollard pull with 250 bhp diesel and maximum speed of 9 knots. *Ibis* Y 658 loaned to Senegal.

Note: Reported that ten Water Tractors are under construction.
One additional Tug *Murene* Y 680 listed.

VANNEAU *4/1979, L. and L. van Ginderen*

6 FIRE-FIGHTING TUGS

Cascade Y 618, *Gave* Y 645, *Geyser* Y 646, *Oued* Y 684, *Aiguière* Y 745, *Embrun* Y 746.

1 FLOATING DOCK

Of 3 500 tons capacity, built in 1975. Based at Papeete for use by Centre Experimentation du Pacifique.

5 FLOATING CRANES

GFA 1-5

With lifts of 7·5-15 tons. One in Cherbourg, two in Brest, two in Toulon. Self-propelled. Grue Flottante Automotrice (GFA).

17 LCUs

CHA 1 6 7 8 9 13-19 22-26

Of 20 ton based at Cherbourg, Brest, Lorient, Toulon, Rochefort. Used as harbour craft.

GOVERNMENT MARITIME FORCES

GENDARMERIE MARITIME

5 Ex-BRITISH "HAM" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
JASMIN (ex-HMS *Stedham*, ex-M 776)	P 661	Blackmore, Bideford	5 Nov 1955
GÉRANIUM (ex-HMS *Tibenham* ex-M 784)	P 784	McGruer	23 July 1955
JONQUILLE (ex-HMS *Sulham*, ex-M 787)	P 787	Fairlie Yacht Co	25 Oct 1955
VIOLETTE (ex-HMS *Mersham*, ex-M 773)	P 788	Harris, Appledore	1955
PAQUERETTE (ex-HMS *Kingham*, ex-M 775)	P 789	J. S. White	14 Aug 1954

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 106·5 × 21·3 × 5·5 *(32·5 × 6·5 × 1·7)*
Gun: 1—20 mm Oerlikon fwd
Main engines: 2 Paxman diesels; 1 100 bhp = 14 knots
Oil fuel, tons: 15
Complement: 12 (2 officers, 10 men)

Former British inshore minesweepers of the "Ham" class transferred to France under the US "off-shore" procurement programme in 1955. Now used as patrol craft by Gendarmerie Maritime. *Jasmin* (Lorient), *Violette* (La Pallice), *Geranium* (Cherbourg), *Jonquille* and *Paquerette* (Toulon).

"HAM" Class *9/1978, Michael D. J. Lennon*

P 778 779 780 *(Karukera)* **781** *(Guyane)*

Displacement, tons: 35
Dimensions, feet (metres): 81·7 × 17·4 × — *(24·9 × 5·3 × —)*
Gun: 1—12·7 mm MG

Commissioned 1974: 778 at Papeete, 779 at Réunion, 780 and 781 in French Guyana.

P 770 772 774

Tecimar "Volte 43" class of 14 tons with 2 MG and 25 knots. 770 and 771 commissioned 25 February 1975, 772 and 774 on 23 June 1975. 770 at Mayotte (Comoros), 772 and 774 at Brest. 771 has been transferred to Government of Jibuti.

P 772 *1980, J. Y. Robert*

LA DOUANE

The French customs service has a number of tasks not normally associated with such an organisation. In addition to the usual duties of dealing with ships entering either their coastal area or ports La Douane also has certain responsibilities for rescue at sea, control of navigation, fishery protection and pollution protection. For these purposes 650 officers and men operate a number of craft of various dimensions; Class I of 30 metres, 24 knots and a range of 1 200 miles—Class II of 27 metres, 24 knots and with a range of 900 miles—Class III of 17-20 metres, 24 knots and a range of 400 miles—Class IV of 12-17 metres, 24 knots and a range of 400 miles. In addition La Douane operates a number of helicopters and fixed wing aircraft.

GABON

Ministerial

Minister of National Defence:
President El Hadj Omar Bongo

Senior Officer

Commanding Officer of the Navy:
Commander Alain Beck, FN

Base

Port Gentil

Personnel

(a) 1981: 170 officers and men
(b) Voluntary service

Mercantile Marine

Lloyd's Register of Shipping:
14 vessels of 77 095 tons gross

DELETION

1975 *Bouet-Willaumez* (ex-HDML 102)

LIGHT FORCES

1 FAST ATTACK CRAFT (MISSILE)

Name	*No.*	*Builders*	*Commissioned*
PRESIDENT EL HADJ OMAR BONGO	P 10	Chantiers Navals de l'Esterel	7 Aug 1978

Displacement, tons: 150
Dimensions, feet (metres): 138 × 25·3 × 6·5 *(42 × 7·7 × 1·9)*
Missiles: 4—SS12M
Guns: 1—40 mm; 1—20 mm
Main engines: 3 MTU 20V 672 TY90 diesels; 3 shafts; 9 450 hp = 38·5 knots
Range, miles: 1 500 at 15 knots
Complement: 20 (3 officers, 17 ratings)

Launched 21 November 1977. Triple skinned mahogany hull.

Trials: On trials achieved 10 500 bhp giving 40 knots.

PRESIDENT EL HADJ OMAR BONGO *1978, Chantiers Navals de l'Esterel*

0 + ?3 FAST ATTACK CRAFT (GUN)

Displacement, tonnes: 85 full load
Dimensions, feet (metres): 88·5 × 22·3 × 6·9 *(27 × 6·8 × 2·1)*
Guns: 1—40 mm Bofors; 1—20 mm
Main engines: 2 MTU diesels; 7 000 hp = 36 knots
Range, miles: 600 at 36 knots
Complement: 16 (2 officers, 14 ratings)

The first of this class, *Ngolo* GC 04 was laid down June 1976. Launched December 1976. She was the largest high-speed GRP hull in commission. In March 1980 *Ngolo* was destroyed by fire. It is reported that a further three are on order.

Trials: On measured distance trials in Italy of *Ngolo* each engine developed 3 480 bhp at a speed of 43·8 knots. Contractual trials at tropical ratings resulted in 3 120 bhp per engine giving a max speed 40·15 knots and a continuous run giving 2 600 bhp per engine for a speed of 36·4 knots. Ranges at tropical ratings 1 260 miles at 14 knots and 1 020 miles at 20 knots. In Force 5-7, sea state 4, a four hour run gave an average of 35·2 knots.

NGOLO *1978*

FAST ATTACK CRAFT (GUN)

Name	*No.*	*Builders*	*Commissioned*
N'GUENE	GC 03	Swiftships, USA	Apr 1975

Displacement, tons: 118
Dimensions, feet (metres): 105·6 × — × 7·5 *(32·2 × — × 2·3)*
Guns: 1—40 mm; 1—20 mm; 2—12·7 mm MGs
Main engines: 3 diesels; 3 shafts = 27 knots
Range, miles: 825 at 25 knots
Complement: 17 (2 officers, 15 ratings)

Aluminium hull.

1 FAST ATTACK CRAFT (PATROL)

Name	*No.*	*Builders*	*Commissioned*
PRESIDENT ALBERT BERNARD BONGO	GC 02	Chantiers Navals de l'Esterel	Mar 1972

Displacement, tons: 80 full load
Dimensions, feet (metres): 105 × 19 × 5·3 *(32 × 5·8 × 1·6)*
Guns: 2—20 mm
Main engines: 2 MTU diesels; 5 400 hp = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 17 (2 officers, 15 ratings)

Fitted with radar and echo sounder.

PRESIDENT ALBERT BERNARD BONGO *1978, Chantiers Navals de l'Esterel*

LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
PRESIDENT LEON M'BA	GC 01	Gabon	1968

Displacement, tons: 85 standard
Dimensions, feet (metres): 92 × 20·5 × 5 *(28 × 6·3 × 1·5)*
Guns: 2—12·7 mm MGs
Main engines: 2 Baudoin diesels; 2 screws; 540 hp = 12·5 knots
Complement: 16

Launched on 16 January 1968.

1 LCM

Name	*No.*	*Builders*	*Commissioned*
MANGA	—	DCAN, Dakar	1976

Displacement, tons: 150 full load
Dimensions, feet (metres): 78·8 × 21 × 4·2 *(24 × 6·4 × 1·3)*
Gun: 1—12·7 mm MG
Main engines: 2 Poyaud V8-250 diesels; 480 hp; 2 shafts = 8 knots
Range, miles: 600 at 5 knots
Complement: 10 (1 CPO, 9 ratings)

COAST GUARD

6 ARCOA COASTAL PATROL CRAFT

Capable of 15 knots.

2 COASTAL PATROL CRAFT

NDJOLE **OMBOUE**

Dimensions, feet (metres): 40 × 12·3 × 3 *(12·2 × 3·8 × 0·9)*
Main engine: 1 diesel; 1 shaft; 171 hp = 10 knots

Ordered from La Manche October 1976, launched September 1977, completed 24 November 1977.

1 ARCOA 960 COASTAL PATROL CRAFT

Capable of 25 knots.

1 LAUNCH

N'GOMBE

Dimensions, feet (metres): 56·3 × 14·8 × 4·3 *(17·2 × 4·5 × 1·3)*
Main engine: 1 diesel; 1 shaft; 215 hp = 10 knots

Ordered from La Manche October 1976, completed 24 November 1977. For buoy servicing.

THE GAMBIA

Port

Banjul

Mercantile Marine

Lloyd's Register of Shipping:
7 vessels of 3 907 tons

LIGHT FORCES

1 COASTAL PATROL CRAFT

MANSA KILA IV

Displacement, tons: 40
Dimensions, feet (metres): 74·5 × 19·7 × 5 *(22·7 × 6 × 1·5)*
Main engines: 2 Cummins diesels; 750 bhp = 20 knots

Built by Camper and Nicholson Ltd. Gosport, England to Keith Nelson 75 ft design for a private order—eventually purchased by The Gambia in 1974.

1 FAIREY MARINE "TRACKER 2" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
JATO	P 2	Fairey Marine, UK	1978

Displacement, tons: 31
Dimensions, feet (metres): 63·1 × 16·3 × 4·8 *(19·3 × 5 × 1·5)*
Gun: 1—20 mm
Main engines: 2 General Motors 12V 71T1 diesels; 2 shafts; 1 290 bhp = 25 knots
Range, miles: 650 at 20 knots
Complement: 11

Hull and superstructure of GRP. Air conditioned accommodation. One navigational radar.

JATO *1978, Fairey Marine*

1 FAIREY MARINE "LANCE" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SEA DOG	P 1	Fairey Marine, UK	28 Oct 1976

Displacement, tons: 17
Dimensions, feet (metres): 48·7 × 15·3 × 4·3 *(14·8 × 4·7 × 1·3)*
Guns: 1—20 mm; 2 MGs
Main engines: 2 General Motors 8V 71T1; 850 hp = 23 knots
Complement: 9

Delivered 28 October 1976 for the Customs' service.

SEA DOG *1976, Fairey Marine*

GERMANY, Democratic Republic

Ministerial

Minister of National Defence:
General Heinz Hoffmann

Headquarters' Appointments

Commander-in-Chief, Volksmarine:
Vice-Admiral Willi Ehm
Chief of Naval Staff:
Rear-Admiral Gustav Hesse

Personnel

(a) 1981: 1 800 officers and 15 200 men (including GBK)
(b) 18 months' national service

Bases

Rostock/Gehlsdorf: Navy Headquarters;
Peenemunde: HQ 1st Flotilla;
Warnemunde: HQ 4th Flotilla;
Dranske-Bug: HQ 6th Flotilla;
Sassnitz: Minor base;
Wolgast: Minor base;
Tarnewitz: Minor base.

Naval Air

1 squadron with 8 Mi-4 helicopters

Grenze Brigade Kuste (GBK)

The seaborne branch of the Frontier Guards, this is a force of about 3 000 men. Their various craft are difficult to distinguish from those of the Navy, many being taken from that list. Where possible, mention of this is made in the notes.

Strength of the Fleet

Type	*Active*	*Building*
Frigates	2	—
Corvettes	1	5
Large Patrol Craft	12	—
Fast Attack Craft—Missile	15	—
Fast Attack Craft—Torpedo	49	—
Landing Ships	12	5
Minesweepers—Coastal	33*	—
Intelligence Ships	3	—
Survey Ships	4	—
Supply Ships	7	—
Support Tankers	5	—
Buoy Tenders	11	—
Ice Breakers	3	—
Tugs	13	—
Tenders	4	—
Training Ships and Craft	1	1
Cable Layer	1	—
Torpedo Recovery Vessels	2	—
State Yacht	1	—
Salvage Ships	2	—
Research Ship	1	—
Diving Tenders	5	—
Barracks Ships	11	—
Fishery Protection	2	—

* See GBK

Mercantile Marine

Lloyd's Register of Shipping:
451 vessels of 1 532 197 tons gross

DELETIONS

Frigates

1976 *Karl Marx* ("Riga" class)
1978 *Ernst Thalmann* ("Riga" class)

Light Forces

1978 4 "SO 1" class, 25 "Iltis" class, 4 "P6" class
1979 5 "Iltis" class
1980 10 "Iltis" class

Amphibious Forces

1978 7 "Robbe" class, 10 "Labo" class
1979 2 "Robbe" class, 2 "Labo" class
1980 1 "Robbe" class

FRIGATES

2 SOVIET "KONI" CLASS

Name	*No.*	*Builder*	*Commissioned*
ROSTOCK	141	Leningrad	25 July 1978
BERLIN	142	Leningrad	10 May 1979

Displacement, tons: 1 800 standard; 2 300 full load
Dimensions, feet (metres): 311·6 × 35·4 × 12·5 *(95 × 10·8 × 3·8)*
Missiles: SAM; 1 twin SA-N-4
Guns: 4—3 in (76 mm) (twins); 2 Gatlings; Saluting guns
A/S weapons: 2—12-barrelled MBUs
Mines: Can lay mines
Main engines: CODAG; 2 diesels (outer shafts); 5 400 shp; 1 gas turbine (centre shaft); 13 530 shp
Speed, knots: 32 (gas); 22 (diesel)
Complement: 130

More may follow.

BERLIN *1979*

CORVETTES

1 + 5 "KORALLE" CLASS

Name	*No.*	*Builders*	*Commissioned*
KORALLE	17	Peenewerft, Wolgast	1980
—	18	Peenewerft, Wolgast	1981
—	19	Peenewerft, Wolgast	1981

Displacement, tons: 1 200 full load
Dimensions, feet (metres): 239·4 × 31·8 × 12·5 *(73 × 9·7 × 3·8)*
Missiles: SAM; 2—S-A-N-5
Guns: 2—57 mm (twin, aft); 2—30 mm (twin fwd)
A/S weapons: 2—RBU 6000; 4 single 16 in *(406 mm)* torpedo tubes
Main engines: ? diesels

Three more building. Basically very similar to Soviet "Grisha" class. Originally classified "Balcom 4".

LIGHT FORCES

12 "HAI III" CLASS (LARGE PATROL CRAFT)

BAD DOBERMAN	**GREVESMÜHLEN**	**RIBNITZ-DAMGART**
BÜTZOW	**LÜBZ**	**STERNBERG**
DIRNA	**LUDWIGSLUST**	**TETEROW**
GADEBUSCH	**PERLEBERG**	**WISMAR**

Displacement, tons: 300 standard; 370 full load
Dimensions, feet (metres): 187 × 19 × 8·2 *(57 × 5·8 × 2·5)*
Guns: 4—30 mm (2 twin)
A/S weapons: 4 RBU 1 800 five-barrelled launchers; 2 DC racks
Main engines: 1 gas turbine; 10 000 hp; 2 diesels; 4 800 bhp; 3 shafts = 25 knots
Complement: 28

Built by Peenewerft, Wolgast. The prototype vessel was completed in 1963. All were in service by the end of 1969, and the programme is now completed. Fitted for minelaying. Pennant numbers 211-216, 241-246.

"HAI" Class (old number)

15 Ex-SOVIET "OSA I" CLASS (FAST ATTACK CRAFT—MISSILE)

ALBERT GAST
ALBIN KOBIS
ANTON SAFEKOW*
AUGUST LUTTGENS
FRIEDRICH SCHULZE*
FRITZ GAST
HEINRICH DORRENBACH
JOSEF SCHARES
KARL MESBERG
MAX REICHPIETSCH
OTTO TOST
PAUL EISENSCHNEIDER
PAUL WIECZOREK
RICHARD SORGE
RUDOLF EGELHOFER
* Training Craft

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (single launchers)
Guns: 4—30 mm (2 twin, 1 fwd, 1 aft)
Main engines: Three M503A diesels; 12 000 bhp; 3 shafts = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Pennant numbers 711-714, 731-734, 751-754, S 711-712.

"OSA I" Class *1965, Reinecke*

19 Ex-SOVIET "SHERSHEN" CLASS
(FAST ATTACK CRAFT—TORPEDO)

ADAM KUCKHOFF
ARTHUR BECKER
ARVID HARNACK
BERNARD BÄSTLEIN
BRUNO KÜHN*
EDGAR ANDRÉ
ERICH KUTTNER
ERNST GRUBE*
ERNST SCHNELLER
FIETE SCHULZE
FRITZ BEHN
FRITZ HECKERT
HANS COPPI
HEINZ BEIMLER
HEINZ KAPELLE
MAX HOOP
RUDOLF BREITSCHEID*
WILHELM FLORIN
WILLI BANSCH
* Training Craft

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twin)
A/S weapons: 12 DCs
Torpedo tubes: 4—21 in *(533 mm)* (single)
Main engines: 3 M503A diesels; 12 000 bhp; 3 shafts = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

Acquired from the USSR. Four were delivered in 1968-69, the first installment of a flotilla. The last three transferred 1976. They do not differ from the Soviet boats of the class.
Pennant numbers 811-15, 831-835, 852-855, S 814-816.

"SHERSHEN" Class *6/1978*

30 "LIBELLE" CLASS (FAST ATTACK CRAFT—TORPEDO)

KARL BAIER **+29**

Displacement, tons: 30
Dimensions, feet (metres): 59 × 16·4 × 3·3 *(18 × 5 × 1)*
Guns: 2—23 mm (twin)
Torpedo tubes: 2—21 in *(533 mm)* (stern launching)
Main engines: 3 diesels; 3 shafts; 3 600 hp = 40 knots

A class first reported in 1975. An improved "Iltis" class. Can be used for minelaying and commando operations. Conversion for new tasks is a speedy job. In series production. Pennant numbers 911-915, 921-925, 931-935, 941-945, 951-955, 961-965.

"LIBELLE" Class *1978*

MINE WARFARE FORCES

20 "KONDOR I", 2 "MOD KONDOR I" and 30 "II" CLASSES
(MINESWEEPERS—COASTAL and GBK PATROL CRAFT)

AHRENSHOOP*†
ALTENBURG
ANKLAM*†
BANSIN
BERGEN*†
BERNAU
BITTERFELD
BOLTENHAGEN
DEMMIN*†
DESSAU
EILENBURG
FREIBERG
GENTHIN
GRAAL-MÜRITZ*†
GRANSEE
GREIFSWALD*†
GREIZ
GRIMMA
GUBEN
JÜTERBOG
KAMENZ**
KLÜTZ
KUHLUNGSBORN*
KYRITZ
MEISSEN*†
NEURUPPIN
NEUSTRELITZ*†
ORANIENBURG
PASEWALK*†
PRENZLAU*†
PREROW*†
PRITZWALK
RATHENOW
REIRIK*†
RIESA
ROBEL
ROSSLAU
SCHÖNEBECK
STRALSUND**
STRASBURG
STENDAL*†
TANGERHÜTTE
UCKERMÜNDE*†
WARNEMÜNDE*
WEISSWASSER*†
WILHELM PIECKSTADT
WITTE*†
WITTSTOCK
WOLGAST*
ZERBST
ZINGST*
ZWICKAU*†
*"Kondor I" class. ** Training Ships. † Operated by GBK.

Displacement, tons: 245 standard; 280 full load
Dimensions, feet (metres): 154·2 × 23 × 6·6 *(47 × 7 × 2)* ("Kondor II"—160·8 ft *(49 m)*
Guns: 2—25 mm (twin) ("Kondor I"); 6—25 mm (twins) ("Kondor II")
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 21 knots
Complement: 20-24

Built by Peenewerft, Wolgast. Five units of "Kondor I" class were operational in 1970 and 15 by the end of 1971. They replace the small minesweepers of the "Schwalbe" class. Type II has additional length and extra machine guns. First appeared in 1971. Production continues. *Warnemünde* and *Zingst* act as target ships/torpedo recovery vessels.

Pennant numbers
These have been changed with some frequency. At present the following is as near as can be offered:

Type I (Total 22) Prototype-V31. S424-5. Attached to GBK; 411-416, 421-426, 441-446. Conversion for torpedo recovery—B73 and B74. Conversion to AGIs *Meteor* and *Komet*. Conversion to state yacht *Ostseeland*.

Type II (Total 30) Prototype-V32. Active minesweepers 311-316, 321-326, 331-336, 341-346. V32, V383 (ex-327), V381, V382 (ex-347) +2.

"KONDOR II" Class *9/1976*

"KONDOR II" Class *9/1976*

AMPHIBIOUS FORCES

12 "FRÖSCH" CLASS (LSTs)

COTTBUS 614
EBERSWALDE
EISENHÜTTEN STADT
FRANKFURT AM ODER
HOYERS WERDE 634
LÜBBEN
NEUBRANDENBURG
SCHWERIN
SEIGER 631
+3

Displacement, tons: 1 950 standard; 4 000 full load
Length, feet (metres): 298·4 × 36·1 × 9·2 *(91 × 11 × 2·8)*
Guns: 4—57 mm (twins); 4—30 mm (twins)
Main engines: 2 diesels; 2 shafts = 18 knots

A class similar but not identical to Soviet "Ropucha" class apparently with no bow doors but a ramp. Stern doors fitted. Building by Peenewerft, Wolgast. First seen in Baltic in 1976. Continuing programme. Pennant numbers include 610-14, 631-34. Capacity 800 tons including 12 tanks.

Armament: Space provided for rocket launcher between forward 57 mm mounting and bridge. Not yet fitted. Fitted for minelaying through stern doors.

Electronics: Carry a very considerable number of radio aerials suggesting a command role.

Radar: Square Head, Strut Curve.
Fire control: Muff Cob.
IFF: High Pole.
Navigation: TSR 333.

"FRÖSCH" Class *1978*

INTELLIGENCE SHIPS

2 "MOD KONDOR I" CLASS

KOMET D 42 **METEOR** D 43

Displacement, tons: 245 standard; 280 full load
Dimensions, feet (metres): 154·2 × 23 × 6·6 *(47 × 7 × 2)*
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 21 knots

Conversions from standard "Kondor I" class coastal minesweepers with sweepgear removed and deckhouse fitted aft. *Komet* has no black funnel cap.

METEOR *5/1977, Gerhard Koop*

HYDROGRAPH D 41

Displacement, tons: 500 standard
Dimensions, feet (metres): 167 × 28·8 × 11·2 *(50·9 × 8·7 × 3·4)*
Main engine: 1 diesel; 540 hp = 11 knots
Range, miles: 8 000 at 11 knots
Complement: 32

Built in 1960 by Volkswerft, Stralsund to Soviet "Okean" trawler design.

HYDROGRAPH *6/1978, Gerhard Koop*

SURVEY SHIPS

1 Ex-SOVIET "KAMENKA" CLASS

BUK D 29

Displacement, tons: 1 000 standard
Dimensions, feet (metres): 180·5 × 31·2 × 11·5 *(55 × 9·5 × 3·4)*
Main engines: 2 diesels; 3 000 hp = 16 knots

BUK *1970*

KARL F. GAUSS D 24

Built on 280 ton "Kondor" hull, unarmed. Carries four small survey launches. Naval manned.

JOHAN KRUGER D 23

Built 1951-52. Of 420 tons and 9 knots.

FLAGGTIEF D 11

Built in 1953. Of 50 tons and 8 knots.

SERVICE FORCES

3 TYPE 600 (SUPPORT TANKERS)

POEL C 24 **HIDDENSEE** C 37 **RIEMS** C 75

Displacement, tons: 1 000
Dimensions, feet (metres): 195 × 29·5 × 12·5 *(59·5 × 9 × 3·8)*
Main engines: 2 diesels; 2 800 bhp = 14 knots
Complement: 26

Built by Peenewerft, Wolgast, in 1960-61. Civilian manned. Oil capacity 645 tons. Ships similar but not identical.

POEL *1971, S. Breyer*

2 "KUMO" CLASS (SUPPORT TANKERS)

VILM C 15 — C 41

Displacement, tons: 550
Dimensions, feet (metres): 118 × 24 × 8·9 *(36 × 7·3 × 2·7)*
Main engines: Diesel = 10 knots

Built in mid-1950s by Mathias Thesen, Wismar.

5 "GUSTAV KÖNIGS" CLASS (HARBOUR TANKERS)

C 16, C 17, C 25, C 76, C 77

Built by VEB/Rosslau-Elbe.

2 "MOD FRÖSCH" CLASS (TRANSPORTS)

— E 35 **SUEDPERD** E 36

A new class built at Peenewerft, Wolgast. Used as AK/AGP. Built to modified "Frösch" design. Have 5-ton crane amidships, no rocket launchers and no ramp to main deck. Otherwise general data as in "Frösch" class under Amphibious Forces.

1 "BASKUNCHAK" CLASS (SUPPLY SHIP)

— (ex-*Usedom*)

Displacement, tons: 2 500
Dimensions, feet (metres): 227 × 29 × 12·3 *(70 × 8·9 × 3·8)*
Speed, knots: 13

Tanker converted to act as supply ship.

Ex-USEDOM *1973, S. Breyer*

2 "MOD KUMO" CLASS (SUPPLY SHIPS)

— (ex-*Rüden*) E 18 — (ex-*Freundschaft*) E 44

Converted from small tankers. Details as in "Kumo" class above.

TIMMENDORF E 81

Small freighter.

1 CABLE LAYER

DORNBUSCH D 31

Cable layer of 700 tons with bow rollers.

DORNBUSCH *1967*

SALVAGE SHIPS

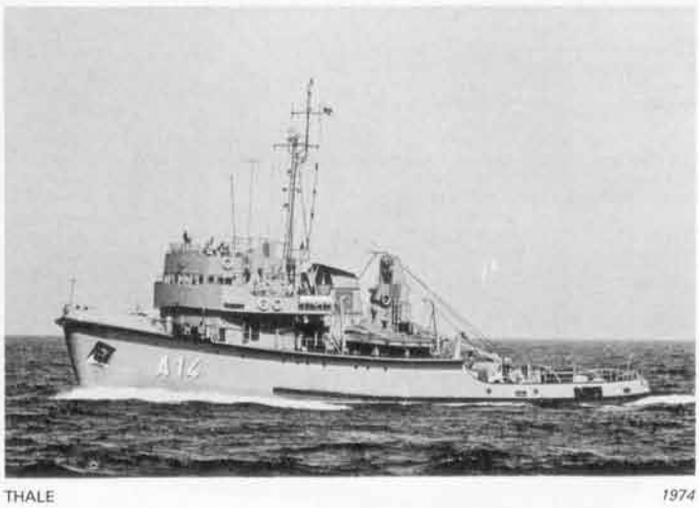
Name	*No*	*Builders*	*Commissioned*
OTTO VON GUERICKE	A 46	Danzig North	1977

Displacement, tons: 1 560 standard; 1 732 full load
Dimensions, feet (metres): 240 × 32·8 × 13·1 *(73·2 × 10 × 4)*
Guns: 8—25 mm (4 twin)
Main engines: 2 diesels; 3 800 bhp; 2 shafts = 16·5 knots
Range, miles: 3 000 at 12 knots.

Basically a "Moma" class hull; sister to Polish "Piast" class. Carries extensive towing and fire-fighting equipment as well as a bargee diving-bell stowed on port side forward of bridge.

THALE A 14

Small salvage ship of 800 tons and 12 knots.



THALE *1974*

MISCELLANEOUS

2 "KONDOR I" CLASS (TRVs)

B 73 (ex-*Warnemunde*) **B 74** (ex-*Zingst*)

Details under Mine Warfare Forces section. Converted for torpedo recovery.

B 74 *9/1978, Gerhard Koop*

HUGO ECKENER U 33

Ex-Cuban stern trawler of 338 grt *(37·7 × 8·2 × 3 m)* with 520 hp diesel = 10 knots.
Acts as diving tender.

HUGO ECKENER *5/1977, Gerhard Koop*

1 RESEARCH VESSEL

PARCHIM V 86

Details under "Hai" class corvettes. Used for MS research.

1 STATE YACHT

OSTSEELAND

Converted "Kondor I" class. Details under Mine Warfare Forces section.

4 "TAUCHER" (SEINER II) CLASS (DIVING TENDERS)

K 19 **K 74** **+2**

Displacement, tons: 310 full load
Dimensions, feet (metres): 98·4 × 21·3 × 9 *(30 × 6·5 × 3)*
Main engines: 2 diesels = 12 knots

Small diving tenders with recompression chamber.

LUMME

Small diving tender. Tug type.

FREESENDORF D 32

Built in 1963. Buoy-layer. Of similar type to *Dornbusch*.

8 BUOY TENDERS

GOLWITZ D 25 **GRAS ORT** D 27 **ROSEN ORT** D 33 **RAMZAU** D 37
BREITLING D 26 **ESPER ORT** D 28 **LANDTIEFF** D 34 **PALMER ORT** D 39

Displacement, tons: 158 standard; 320 full load
Dimensions, feet (metres): 97 × 20·3 × 6·2 *(29·6 × 6·2 × 1·9)*
Main engine: 1 diesel; 580 hp = 11·5 knots

Delivered 1970-72. Civilian manned under the Naval Hydrographic Service.

BREITLING *1972*

3 BUOY TENDERS

ARKONA **DASSER ORT** **STUBBENKAMMER**

Built in 1965-70. Of 55 tons and 10 knots.

TRAINING SHIPS

Name	*No.*	*Builders*	*Commissioned*
WILHELM PIECK	S 61	Naval Yard, Gdynia	6 July 1976

Displacement, tons: 1 800
Dimensions, feet (metres): 239·4 × 39·4 × 16·4 *(73 × 12 × 5)*
Guns: 2—30 mm (twin); 4—25 mm (twins)
Main engines: 2 diesels = 17 knots
Complement: 100

Cadets' training ship. Sister ship to Polish "Wodnik" class training ships.

NEW CONSTRUCTION

A new sailing ship is under consideration. The USSR is discussing such a programme with Blohm and Voss, Hamburg but it is not known if such an approach covers this ship.

BARRACKS SHIPS

1 Ex-SOVIET "RIGA" CLASS

ERNST THÄLMANN

The last of five frigates transferred to East Germany. Of 1 600 tons full load and now used as a self-propelled barracks ship.

2 "MOD JUGEND" and 8 "JUGEND" CLASSES

Barracks barges.

FISHERY PROTECTION SHIPS

ERNS HAECKEL **ROBERT KOCH**

Built in 1962 and 1955. Of 1 108 tons (grt) and 13 knots. Built by Neptun, Rostock.

ICEBREAKERS

STEPHAN JANTZEN

Of 2 500 tons and 13 knots built in 1965. Of Soviet "Dobrynya Nikitch" class. Civilian manned.

EISBAR **EISVOGEL**

Of 550 tons and 12 knots built in 1957. Civilian manned.

TUGS

EHLE A 73

Ocean going tug.

WISMAR

Of 700 tons and 14 knots. Possibly civilian manned.

8 TYPE 270 (HARBOUR TUGS)

PEENE A 11 **HAVEL** A 22 **ERICH KRENKEL** A 72
SPREE A 12 **ELBE** A 23 **ERICH WEINERT**
BELT A 13 **ODER** A 71

TYPE 270 *1977*

5 "IBIS" CLASS (FIRE-FIGHTING TUGS)

F 31 **F 32** **F 45** **F 82** **F 83**

Note: Gesellschaft für Sport und Technik (GST) (Association for Sport and Technical Science) controls several training ships—*Ernst Schneller*, "Tummler" class; *Partisan*, and *Pionier* of 80 tons; *Timme* (ex-*Timmendorf*) E 81; *F. L. Jahn* of 100 tons; and the sail training ships *Seid Bereit*, *Jonny Scheer*, *Max Reichpietsch II* and *Knechtsand II*. Several 18 ton motor craft of MAB 14 Type including *Peene*, *Ryck* and *Spree* added in August 1979.

GRENZE BRIGADE KUSTE (GBK)

(See note at head of section)

In addition to 17 of the "Kondor" class operated by the GBK the following are also manned by the Frontier Guards.

12 "BREMSE" CLASS (GBK COASTAL PATROL CRAFT)

Displacement, tons: about 25
Dimensions, feet (metres): 74 × 16·4 × — *(23 × 5 × —)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels = 14 knots

This class was introduced in 1971 for operations on rivers and inland waterways by the GBK. Also known as "KB 123" class.
Pennant numbers: G 30-39 +2.

"BREMSE" Class (unarmed) *1972*

Another class, the "Kutter" class of six craft is reported as operated by GBK. Pennant numbers G 60-G 65. Appear to be converted trawler type. Some 30 other harbour patrol craft with pennant numbers in G 500 and G 700 series also reported.

GERMANY, Federal Republic

Headquarters' Appointment

Chief of Naval Staff, Federal German Navy:
Vice-Admiral Ansgar Bethge

Senior Appointment

Commander-in-Chief of the Fleet:
Vice-Admiral Günther Fromm

Diplomatic Representation

Naval Attaché in Buenos Aires:
Captain M. von Eitzen
Naval Attaché in The Hague:
Commander P. Hammer
Defence Attaché in Lisbon:
Commander H. J. Hahn
Naval Attaché in London:
Captain K. Dingeldein
Naval Attaché in Moscow:
Captain H. Abel
Naval Attaché in Oslo (and Stockholm):
Commander K. F. Schinkel
Naval Attaché in Paris:
Rear-Admiral C. Hoffmann
Naval Attaché in Rome:
Commander C. von Criegern
Naval Attaché in Teheran:
Commander U. Mahrenholtz
Naval Attaché in Tokyo:
Captain P. Hufschmidt
Naval Attaché in Washington:
Captain U. Rädicke

Personnel

(a) 1977: 38 275 (5 600 officers, 32 675 men)
1978: 38 394 (5 600 officers, 32 794 men)
1979: 38 650 (5 400 officers, 32 650 men)
1980: 38 500 (5 600 officers, 32 900 men)
1981: 35 700 (4 456 officers, 31 244 men)
(Includes Naval Air Arm)

(b) 15 months' national service

Bases

Gluecksburg (C in C Fleet), Flensburg, Wilhelmshaven, Kiel, Olpenitz.
The administration of these bases is vested in the Naval Support Command at Wilhelmshaven.

Naval Air Arm

(See Future Developments)

6 700 men total
1 LRMP squadron (19 Breguet Atlantic of which 5 converted for EW), MFG 3
2 Fighter bomber squadrons (95 F104G—conversion to Tornados to start later), MFG 1 and 2
1 Reconnaissance Squadron (25 RF104G)
1 Helicopter squadron (22 Sea King Mk 41 for SAR.) from Kiel, Westerland and Borkum, MFG 5
20 Liaison aircraft (DO28), MFG 5
(MFG = Marine Flieger Geschwader)
Modernisation of 14 LRMP aircraft under way by Dornier. Due to complete mid-1983 at cost of £75 million (1979 prices).

Prefix to Ships' Names

Prefix FGS is used in communications.

Future Development and Acquisitions

Interest is being shown by the Naval Staff in various and varied projects.
(a) Development of SAMs and ASMs with other European countries.
(b) Replacement of F104G aircraft by MRCA—Tornados ordered.
(c) Modernisation of Breguet Atlantics preferred to replacement (mid-1978). Conversions to complete—April 1981 to mid-1983.
(d) Mine Warfare forces to be improved by conversion of 12 MSCs to Minehunters and replacement of some "Schütze" class by six other MSCs modified to operate remotely controlled unmanned systems (Troika). Other "Schütze" class to be replaced by new Type 343. In late 1980s new Type 332 will probably replace "Lindau" MHCs.
(e) Development of new 750 ton submarine (Type 208) which may have fuel-cell propulsion power.
(f) On 28 September 1978 decision taken to acquire Lynx helicopters for new frigates. Proceeding.

Hydrographic Service

This service is under the direction of the Ministry of Transport, is civilian manned with HQ at Hamburg. Survey ships are listed at the end of the section.

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Submarines—Patrol	24	—
Destroyers	9	—
Frigates	6	6 (2)
Corvettes	6	—
Fast Attack Craft (Missile)	30	10
Fast Attack Craft (Torpedo)	10	—
LCUs	22	—
Minesweepers—Coastal and Minehunter	39	(10)
Minesweepers—Inshore	20	—
Depot Ships	11	—
Repair Ships	2	—
Fleet Replenishment Ships	2	—
Replenishment Tanker	1	—
Support Tankers	6	—
Support Ships	8	—
Ammunition Transports	2	—
Mine Transports	2	—
Training Ship	1	—
Sail Training Ships	2	—
TRVs	13	—
SAR Launch	1	—
Coastal Patrol Craft	8	—
Auxiliaries (some non-naval)	48	—
Tugs—Ocean	8	—
Tugs—Harbour/Coastal	16	—
Icebreakers	2+1*	—
*Coast Guard Craft	9	—
*Survey Ships	9	—
*Fishery Protection Ships	8	—

*Non-naval

Mercantile Marine

Lloyd's Register of Shipping:
1 906 vessels of 8 355 638 tons gross

DELETIONS

Submarines

1974 U4, 5, 6, 7, 8, (Type 205)

Destroyers

1979 Z 1 (transferred to Greece)
1980 Z 3 (transferred to Greece, Oct.)
1981 Z 4 (transferred to Greece, Feb.)

Fast Attack Craft (Torpedo)

1974 *Dommel, Elster*
1975 20 "Jaguar" class transferred (*Alk, Fuchs, Häher, Löwe, Pelikan, Pinguin, Reiher, Storch, Tiger* and *Wolf* to Turkey and *Albatros, Bussard, Falke, Geier, Greif, Habicht, Kondor, Seeadler* and *Sperber* to Greece).
1977 *Kormoran,* to Greece

Coastal Patrol Craft

1974 TM 1, KW 2, KW 8, FW 2, FW 3

Minesweepers

1975 *Vegesack, Hameln, Siegen, Detmold, Worms* ("Vegesack" class) (transferred to Turkey, Sep)
1977 *Niobe*

Depot Ships

1975 *Weser* (transferred to Greece)
1976 *Ruhr* (transferred to Turkey)

Supply Ships

1974 *Schwarzwald*
1976 *Dithmarschen* (transferred to Turkey)
1977 *Frankenland, Emsland, Münsterland, Bodensee* (last to Turkey)

Auxiliaries

1975 *Karl Kolls* (sold), FL 11, *Herman von Helmoltz*
1978 *Ems, Eider, Pellworm, Blauort, Wieland,* OT 2, TF 103, EF 3 and *Passau*
1979 TF 105
1980 *Memmert*

PENNANT LIST

Submarines

S 170	U 21
S 171	U 22
S 172	U 23
S 173	U 24
S 174	U 25
S 175	U 26
S 176	U 27
S 177	U 28
S 178	U 29
S 179	U 30
S 180	U 1
S 181	U 2
S 188	U 9
S 189	U 10
S 190	U 11
S 191	U 12
S 192	U 13
S 193	U 14
S 194	U 15
S 195	U 16
S 196	U 17
S 197	U 18
S 198	U 19
S 199	U 20

Destroyers

D 171	Z 2
D 179	Z 5
D 181	Hamburg
D 182	Schleswig-Holstein
D 183	Bayern
D 184	Hessen
D 185	Lütjens
D 186	Mölders
D 187	Rommel

Frigates

F 220	Köln
F 221	Emden
F 222	Augsburg
F 223	Karlsrühe
F 224	Lübeck
F 225	Braunschweig
F 226	Bremen
F 227	Niedersachsen
F 228	Rheinland-Pfalz
F 229	—
F 230	—
F 231	—

Light Forces

P 6092	Zobel
P 6093	Wiesel
P 6094	Dachs
P 6095	Hermelin
P 6096	Nerz
P 6097	Puma
P 6098	Gepard
P 6099	Hyäne
P 6100	Frettchen
P 6101	Ozelot
P 6111	S 61
P 6112	S 62
P 6113	S 63
P 6114	S 64
P 6115	S 65
P 6116	S 66
P 6117	S 67
P 6118	S 68
P 6119	S 69
P 6120	S 70
P 6141	S 41
P 6142	S 42
P 6143	S 43
P 6144	S 44
P 6145	S 45
P 6146	S 46
P 6147	S 47
P 6148	S 48
P 6149	S 49
P 6150	S 50
P 6151	S 51
P 6152	S 52
P 6153	S 53

Light Forces

P 6154	S 54
P 6155	S 55
P 6156	S 56
P 6157	S 57
P 6158	S 58
P 6159	S 59
P 6160	S 60

Mine Warfare Forces

M 1051	Castor
M 1054	Pollux
M 1055	Sirius
M 1056	Rigel
M 1057	Regulus
M 1058	Mars
M 1059	Spica
M 1060	Skorpion
M 1062	Schütze
M 1063	Waage
M 1064	Deneb
M 1065	Jupiter
M 1067	Atair
M 1069	Wega
M 1070	Göttingen
M 1071	Koblenz
M 1072	Lindau
M 1073	Schleswig
M 1074	Tübingen
M 1075	Wetzlar
M 1076	Paderborn
M 1077	Weilheim

Mine Warfare Forces

M 1078	Cuxhaven
M 1079	Düren
M 1080	Marburg
M 1081	Konstanz
M 1082	Wolfsburg
M 1083	Ulm
M 1084	Flensburg
M 1085	Minden
M 1086	Fulda
M 1087	Völklingen
M 1090	Perseus
M 1092	Pluto
M 1093	Neptun
M 1094	Widder
M 1095	Herkules
M 1096	Fische
M 1097	Gemma
M 1652	Frauenlob
M 1653	Nautilus
M 1654	Gefion
M 1655	Medusa
M 1656	Undine
M 1657	Minerva
M 1658	Diana
M 1659	Loreley
M 1660	Atlantis
M 1661	Acheron
M 2650	Ariadne
M 2651	Freya
M 2652	Vineta
M 2653	Hertha
M 2654	Nymphe
M 2655	Nixe
M 2656	Amazone
M 2657	Gazelle

Corvettes

P 6052	Thetis
P 6053	Hermes
P 6054	Najade
P 6055	Triton
P 6056	Theseus

Amphibious Forces

L 760	Flunder
L 761	Karpfen
L 762	Lachs

Amphibious Forces

L 763	Plötze
L 764	Rochen
L 765	Schlei
L 766	Stör
L 767	Tümmler
L 768	Wels
L 769	Zander
L 788	Butt
L 789	Brasse
L 790	Barbe
L 791	Delphin
L 792	Dorsch
L 793	Felchen
L 794	Forelle
L 795	Inger
L 796	Makrele
L 797	Mürane
L 798	Renke
L 799	Salm

Support Ships and Auxiliaries

A 50	Alster
A 52	Oste
A 53	Oker
A 54	Isar
A 55	Lahn
A 56	Lech
A 58	Rhein
A 59	Deutschland
A 60	Gorch Fock
A 61	Elbe
A 63	Main
A 65	Saar
A 66	Neckar
A 67	Mosel
A 68	Werra
A 69	Donau
A 512	Odin
A 513	Wotan
A 1401	Eisvogel
A 1402	Eisbär
A 1407	Wittensee
A 1411	Lüneburg
A 1412	Coburg
A 1413	Freiburg
A 1414	Glücksburg
A 1415	Saarburg
A 1416	Nienburg
A 1417	Offenburg

Support Ships and Auxiliaries

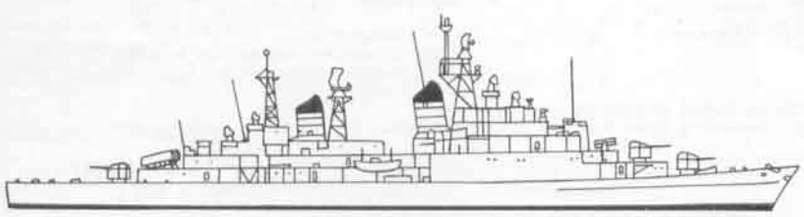
A 1418	Meersburg
A 1424	Walchensee
A 1425	Ammersee
A 1426	Tegernsee
A 1427	Westensee
A 1428	Harz
A 1429	Eifel
A 1435	Westerwald
A 1436	Odenwald
A 1437	Sachsenwald
A 1438	Steigerwald
A 1442	Spessart
A 1443	Rhön
A 1449	Hans Bürkner
A 1450	Planet
A 1451	Wangerooge
A 1452	Spiekeroog
A 1453	Langeoog
A 1455	Norderney
A 1457	Helgoland
A 1458	Fehmarn
Y 802	Plon
Y 806	Hansa
Y 809	Arcona
Y 812	Lütje Hörn
Y 813	Mellum
Y 814	Knechtsand
Y 815	Scharhorn
Y 816	Vogelsand
Y 817	Nordstrand
Y 818	Trischen
Y 819	Langeness
Y 820	Sylt
Y 821	Föhr
Y 822	Amrum
Y 823	Neuwerk
Y 827	KW 15
Y 829	KW 3
Y 830	KW 16
Y 832	KW 18
Y 833	KW 19
Y 834	Nordwind
Y 836	Holnis
Y 837	SP 1
Y 838	Wilhelm Pullwer
Y 841	Walther von Ledebur
Y 844	Barbara
Y 845	KW 17
Y 846	KW 20
Y 849	Stier
Y 851	TF 1

Support Ships and Auxiliaries

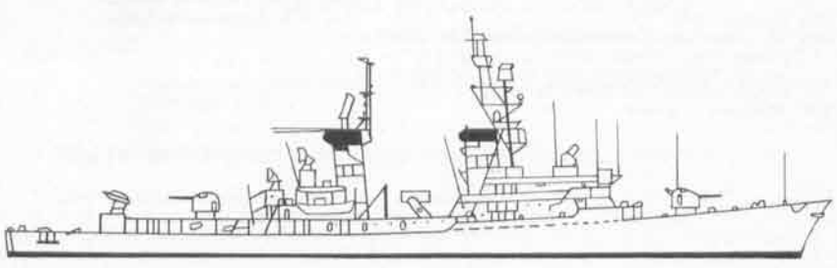
Y 852	TF 2
Y 853	TF 3
Y 854	TF 4
Y 855	TF 5
Y 856	TF 6
Y 864	FW 1
Y 867	FW 4
Y 868	FW 5
Y 869	FW 6
Y 871	Heinz Roggenkamp
Y 872	TF 106
Y 873	TF 107
Y 874	TF 108
Y 875	Hiev
Y 876	Griep
Y 877	H.C. Oersted
Y 880	Wilhelm Bauer
Y 881	Adolf Bestelmeyer
Y 882	Otto Meycke
Y 883	TF 101
Y 884	TF 102
Y 886	TF 104
Y 888	Friedrich Voge
Y 889	Rudolf Diesel
Y 1641	Förde
Y 1642	Jade
Y 1661	Baltrum
Y 1664	Juist
Y 1678	TB 1
Y 1680	Neuende
Y 1681	Heppens
Y 1682	Ellerbek

Coast Guard

BG 5	Rettin
BG 11	Neustadt
BG 12	Bad Bramstedt
BG 13	Ueltzen
BG 14	Duderstadt
BG 15	Eschwege
BG 16	Alsfeld
BG 17	Bayreuth
BG 18	Rosenheim

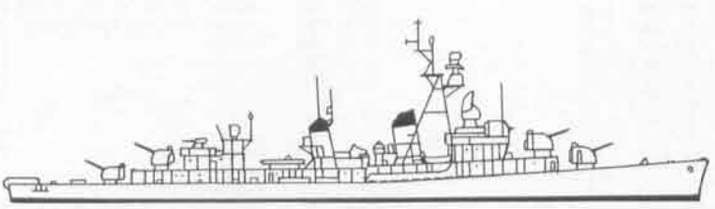


"HAMBURG" Class



"LÜTJENS" Class

"KÖLN" Class



"FLETCHER" Class

"THETIS" Class

SUBMARINES

TYPE 208

Ingenieurkontor, Lübeck is engaged in developing the Type 208 "providing for an air-independent propulsion system" (presumably a fuel cell). Construction of the Type 208 submarines is expected in the 1990s.

18 TYPE 206

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
U 13	S 192	Howaldtswerke, Kiel	24 Nov 1969	28 Sep 1971	19 Apr 1973
U 14	S 193	Reinstahl Nordseewerke, Emden	10 Sep 1970	1 Feb 1972	19 Apr 1973
U 15	S 194	Howaldtswerke, Kiel	29 May 1970	15 June 1972	17 Apr 1974
U 16	S 195	Reinstahl Nordseewerke, Emden	22 Apr 1971	29 Aug 1972	9 Nov 1973
U 17	S 196	Howaldtswerke, Kiel	19 Oct 1970	10 Oct 1972	28 Nov 1973
U 18	S 197	Reinstahl Nordseewerke, Emden	28 July 1971	31 Oct 1972	19 Dec 1973
U 19	S 198	Howaldtswerke, Kiel	14 Jan 1971	15 Dec 1972	9 Nov 1973
U 20	S 199	Reinstahl Nordseewerke, Emden	15 Feb 1972	16 Jan 1973	24 May 1974
U 21	S 170	Howaldtswerke, Kiel	14 Apr 1971	9 Mar 1973	16 Aug 1974
U 22	S 171	Reinstahl Nordseewerke, Emden	3 May 1972	27 Mar 1973	26 July 1974
U 23	S 172	Reinstahl Nordseewerke, Emden	21 Aug 1972	22 May 1973	2 May 1975
U 24	S 173	Reinstahl Nordseewerke, Emden	10 July 1972	26 June 1973	16 Oct 1974
U 25	S 174	Howaldtswerke, Kiel	6 Oct 1971	23 May 1973	14 June 1974
U 26	S 175	Reinstahl Nordseewerke, Emden	17 Nov 1972	20 Nov 1973	13 Mar 1975
U 27	S 176	Howaldtswerke, Kiel	11 Jan 1972	21 Aug 1973	16 Oct 1974
U 28	S 177	Reinstahl Nordseewerke, Emden	26 Jan 1972	22 Jan 1974	18 Dec 1974
U 29	S 178	Howaldtswerke, Kiel	29 Feb 1972	5 Nov 1973	27 Nov 1974
U 30	S 179	Reinstahl Nordseewerke, Emden	27 Apr 1973	26 Mar 1974	13 Mar 1975

Displacement, tons: 450 surfaced; 498 dived
Dimensions, feet (metres): 159·4 × 15·1 × 14·8 *(48·6 × 4·6 × 4·5)*
Torpedo tubes: 8—21 in *(533 mm)* (bow)
Main machinery: MTU diesel-electric; Diesels; 1 500 hp; 1 main motor; 1 800 hp; 1 shaft
Speed, knots: 10 surfaced; 17 dived
Range, miles: 4 500 at 5 knots (surfaced)
Complement: 22 (4 officers, 18 men)

Authorised on 7 June 1969 from Howaldtswerke Deutsche Werft (8) and Rheinstahl Nordseewerke, Emden (10).

Hull: The Type 206 hulls are built of high-tensile non-magnetic steel. In this the Federal German submarines are unique.

Mines: A system has been developed by Ingenieurkontor, Lübeck and tested by the navy which consists of a GRP container secured outside the hull on each side. Each container holds 12 mines and can be carried in addition to the normal torpedo or mine armament.

Radar: Calypso navigation/attack set.
Passive DF.

U 30 *10/1978, Gerhard Koop*

Sonar: Active/passive.
Sonar intercept.

Squadrons: First: U 25-30 U 1 and 2, 9-12. Third: U 13-24.

6 TYPE 205

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
U 1	S 180	Howaldtswerke, Kiel	1 Feb 1965	17 Feb 1967	6 June 1967
U 2	S 181	Howaldtswerke, Kiel	1 Sep 1964	15 July 1966	11 Oct 1966
U 9	S 188	Howaldtswerke, Kiel	10 Dec 1964	20 Oct 1966	11 Apr 1967
U 10	S 189	Howaldtswerke, Kiel	15 July 1965	5 June 1967	28 Nov 1967
U 11	S 190	Howaldtswerke, Kiel	1 Apr 1966	9 Feb 1968	21 June 1968
U 12	S 191	Howaldtswerke, Kiel	1 Sep 1966	10 Sep 1968	14 Jan 1969

Displacement, tons: 419 surfaced; 450 dived
Dimensions, feet (metres): 144 × 15·1 × 14·1 *(43·9 × 4·6 × 4·3)*
Torpedo tubes: 8—21 in *(533 mm)* (bow)
Main machinery: 2 Maybach (MTU) diesels; total 1 200 bhp; 1 Siemens electric motor; 1 500 bhp; single screw
Speed, knots: 10 surfaced; 17 dived
Complement: 22 (4 officers, 18 men)

All built in floating docks. First submarines designed and built by the Federal Republic of Germany since the end of the Second World War. The original U 1 and U 2 which were commissioned in March and May 1962 were not satisfactory and were scrapped. The dates given for these boats are those for the second U 1 and U 2. U 9-12 have hulls of different steel alloys of non-magnetic properties. U 3 of this class lent to Norway on 10 July 1962 and temporarily named *Kobben* (S 310), was returned to West Germany in 1964 and decommissioned on 15 September 1967 for disposal.

Radar: French Thomson-CSF Calypso, navigation attack set.
Passive DF.

Sonar: Active/passive.
Sonar intercept.

U 10 *8/1976, Leo van Ginderen*

Torpedo equipment: The boats are trimmed by the stern to load through the bow caps. Also fitted for minelaying. Fire control by Hollandse Signaal Mk 8.

1 CONVERTED TYPE XXI

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
WILHELM BAUER (ex-*U 2540*)	Y 880	Blohm and Voss, Hamburg	29 Oct 1944	13 Jan 1945	24 Feb 1945

Displacement, tons: 1 620 surfaced; 1 820 dived
Dimensions, feet (metres): 252·7 × 21·7 × 20·3 *(77 × 6·6 × 6·2)*
Torpedo tubes: 4—21 in *(533 mm)* (bow)
Main machinery: 2 diesels; 4 200 bhp; 2 electric motors; 5 000 hp
Speed, knots: 14·5 surfaced; 14 dived

Scuttled after air attack off Flensburg on 4 May 1945. Raised in 1957. Rebuilt in 1958-59 at Howaldtswerke, Kiel. Commissioned on 1 September 1960. Used for experiments on submarine equipment. Conning tower was modified. Non-operational.

WILHELM BAUER *1973, Howaldtswerke, Kiel*

DESTROYERS

3 US "MODIFIED CHARLES F. ADAMS" CLASS (TYPE 103A) (DDGs)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
LÜTJENS (ex-US *DDG 28*)	D 185	Bath Iron Works Corporation	1 Mar 1966	11 Aug 1967	22 Mar 1969
MÖLDERS (ex-US *DDG 29*)	D 186	Bath Iron Works Corporation	12 Apr 1966	13 Apr 1968	20 Sep 1969
ROMMEL (ex-US *DDG 30*)	D 187	Bath Iron Works Corporation	22 Aug 1967	1 Feb 1969	2 May 1970

Displacement, tons: 3 370 standard; 4 500 full load
Dimensions, feet (metres): 437 × 47 × 20 *(133·2 × 14·3 × 6·1)*
Missiles: SAM; 40 Tartar (single Mk 13) (see notes)
Guns: 2—5 in *(127 mm)*/54 (single Mk 42)
A/S weapons: 8 A/S Asroc rockets (octuple launcher); 6 Mk 32 torpedo tubes (triples); 1 DCT
Main engines: Geared steam turbines 70 000 shp; 2 shafts
Boilers: 4 Combustion Engineering; 1 200 psi *(84·4 kg/cm²)*
Speed, knots: 30
Oil fuel, tons: 900
Range, miles: 4 500 at 20 knots
Complement: 337 (19 officers, 318 men)

Modified to suit Federal German requirements and practice. 1965 contract.
Cost $43 754 000 each.

Appearance: Some differences from "Charles F. Adams" in W/T aerials and general outline, particularly the funnels.

Electronics: SATIR I (similar to SENIT 2) automatic data system. TACAN beacon.

Modernisation: Work now in hand includes:
(a) Replacement of after 5-in *(127 mm)* gun by 2 twin Harpoon launchers.
(b) Improved Tartar and 5-in fire control with digital in place of analog computers. Mk 86 WCS.
(c) Sundry minor modifications.
Further modifications projected for 1983-86 to include addition of SSM Harpoon.

Radar: Three dimensional air search and target designator: One SPS 52 (after funnel).
Air surveillance: One SPS 40 (main-mast).
Tartar fire control: Two SPG 51 (abaft after funnel).
Surface warning: One SPS 10.
Gun fire control: One GFCS 68.

Sonar: One SQS 23.

MÖLDERS *1979, Leo van Ginderen*

LÜTJENS *10/1978, J. L. M. van der Burg*

LÜTJENS *1976, Michael D. J. Lennon*

4 "HAMBURG" CLASS (TYPE 101A)

Name	No.	Builders	Laid down	Launched	Commissioned
HAMBURG	D 181	H. C. Stülcken Sohn, Hamburg	29 Jan 1959	26 Mar 1960	23 Mar 1964
SCHLESWIG-HOLSTEIN	D 182	H. C. Stülcken Sohn, Hamburg	20 Aug 1959	20 Aug 1960	12 Oct 1964
BAYERN	D 183	H. C. Stülcken Sohn, Hamburg	14 Sep 1960	14 Aug 1962	6 July 1965
HESSEN	D 184	H. C. Stülcken Sohn, Hamburg	15 Feb 1961	4 May 1963	8 Oct 1968

Displacement, tons: 3 340 standard; 4 680 full load
Dimensions, feet (metres): 438·5 × 44 × 20·3 *(133·7 × 13·4 × 6·2)*
Missiles: SSM; 4 Exocet (2 twin launchers)
Guns: 3—3·9 in *(100 mm)*/55 (single Mod 1954); 8—40 mm Breda (4 twin)
A/S weapons: 2 Bofors 4-barrel 375 mm mortars; 2 DCTs; 4—21 in *(533 mm)* torpedo tubes for A/S torpedoes
Mines: Can lay mines
Main engines: 2 Wahodag geared turbines; 68 000 shp; 2 shafts
Boilers: 4 Wahodag; 910 psi *(64 kg/cm²)*, 860°F *(460°C)*
Speed, knots: 34; 18 economical
Range, miles: 6 000 at 13 knots; 920 at 34 knots
Complement: 268 (19 officers, 249 men)

All named after länder of the German Federal Republic. Capable of minelaying. Carry one 20-barrelled SCLAR launcher.

Electronics: FCS for Bofors A/S launcher, torpedoes and DC from Hollandse Signaalapparaten. ECM fitted.

Modernisation: Replacement of 100 mm in X position by four MM 38 Exocet, replacement of 40 mm Bofors by Bredas and addition of two extra A/S torpedo tubes. Modernisation started in 1975 with *Hessen* followed by *Hamburg, Schleswig-Holstein* and *Bayern*. *Hessen* completed November 1975. Hamburg taken in hand by Blohm and Voss 18 August 1975 completed mid-1976. *Schleswig-Holstein* taken in hand April 1976 completed February 1977. *Bayern* started early in 1977 completed 24 November 1977.
During later refits bridges have been re-modelled.
As the second six Type 122 are no longer planned further modernisation will be necessary.

HESSEN

11/1980, L. and L. van Ginderen

Radar: All by Hollandse Signaalapparaten.
Air warning: One LW-02.
Target designator: One DAO 2.
Navigation/surface warning: Decca.
100 mm fire control: Two M 45 series.
40 mm fire control: Two M 45 series.

Sonar: One ELAC 1BV hull-mounted. Underwater telephone.

BAYERN

10/1978, J. L. M. van der Burg

2 Ex-US "FLETCHER" CLASS (TYPE 119)

Name	No.	Builders	Laid down	Launched	Commissioned
Z 2 (ex-USS *Ringgold*, DD 500)	D 171	Federal S.B. & D.D. Co, Port Newark	25 June 1942	11 Nov 1942	24 Dec 1942
Z 5 (ex-USS *Dyson*, DD 572)	D 179	Consolidated Steel Corporation, Orange	25 June 1941	15 Apr 1942	30 Dec 1942

Displacement, tons: 2 100 standard; 3 120 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18 *(114·7 × 12 × 5·5)*
Guns: 4—5 in *(127 mm)*/38 (single Mk 30)
6—3 in *(76 mm)*/50 (twins Mk 33)
A/S weapons: 2 Hedgehogs; 1 DC rack
2 single 21 in *(533 mm)* torpedo tubes
Mines: Can lay mines
Main engines: 2 sets GE geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox, 569 psi *(40 kg/cm²)*; 851°F *(455°C)*
Speed, knots: 32; 18 economical
Oil fuel, tons: 540
Range, miles: 3 450 at 15 knots (as modified)
Complement: 244 (16 officers, 228 men)

Former US "Fletcher" class destroyers. The original loan from the US of a class of six for five years was extended. First ship arrived at Bremerhaven on 14 April 1958. Commissioned in FGN as follows: *Z 2*, 14 July 1959; *Z 5*, 23 February 1960. Purchased 7 March 1977.
To be replaced by "Bremen" class. *Z 3* and *Z 4* transferred to Greece 1980-81. Transfer of other two being negotiated.

Radar: Air and surface search: One SPS 6.
Surface surveillance: One SPS 10.
Fire control: One GFCS 56 and 68.
Navigation.

Sonar: SQS 29. Underwater telephone.

Transfers: *Z 1* to Greece in 1979, *Z 3* in 1980 and *Z 4* in 1981.

Z 5

6/1980, Michael D. J. Lennon

FRIGATES

0 + 6 + (2) "BREMEN" CLASS (TYPE 122)

Name	No.	Builders	Laid down	Launched	Commissioned
BREMEN	F 226	Bremen Vulkan	9 July 1979	27 Sep 1979	Apr 1982
NIEDERSACHSEN	F 227	AG Weser/Bremen Vulkan	9 Nov 1979	9 June 1980	late 1982
RHEINLAND-PFALZ	F 228	Blohm und Voss/Bremen Vulkan	1980	3 Sep 1980	mid-1983
EMDEN	F 229	Nordseewerke, Emden/Bremen Vulkan	1980	17 Dec 1980	—
KÖLN	F 230	Blohm und Voss/Bremen Vulkan	—	—	—
KARLSRUHE	F 231	Howaldtswerke, Kiel/Bremen Vulkan	—	—	late 1984

Displacement, tons: 3 415 full load
Dimensions, feet (metres): 428 × 48·5 × 19·7 *(130·5 × 14·4 × 6)*
Aircraft: 2 Lynx helicopters
Missiles: SSM: 8 Harpoon (2 launchers); SAM: 1—8 cell Sea Sparrow; 2 multiple Stinger launchers
Guns: 1—76 mm/62; Breda 105 mm 20 tube rocket launcher
A/S weapons: 4 Mk 32 torpedo tubes (twins)
Main engines: 2 GE-LM 2500 gas turbines; 51 600 hp; 2 MTU 20V-956-TB92 diesels; 10 400 hp; 2 shafts; cp propellers
Speed, knots: 30
Range, miles: 4 000 at 18 knots
Complement: 199 (27 officers, 172 men of which 6 officers and 12 men are air complement—225 berths available)

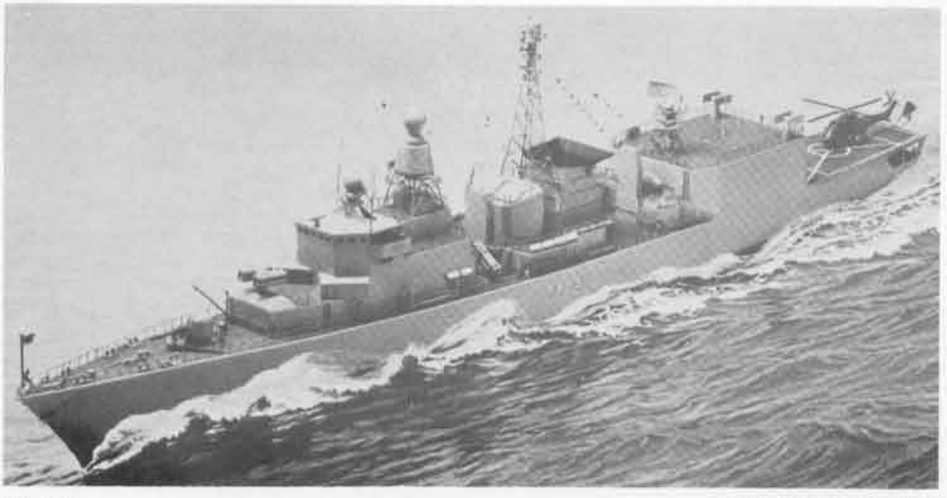
Approval given in early 1976 for six of this class, a modification of the Netherlands "Kortenaer" class. Two more planned although their authorisation is not certain. To replace "Fletcher", and "Köln" classes.

Construction: Hulls and engines are provided in the four building yards. Ships are then towed to Vulkan, Bremen where weapon systems and electronics are fitted.

Dates: As these ships are being built in sections the date of laying down is really symbolic.

Fire control: Satir.

Names: The last three ships' names have been changed from the names of Länder to take the well-known names of the "Köln" class as they are paid off. The three names given here await official confirmation.



TYPE 122 *1976, Federal German Navy*

Radar: HSA DA-08; HSA WM-25; SMA 3RM 20; HSA Stir; HSA ZW-06.

Sonar: Active/Passive DSQS-21 BZ.

6 "KÖLN" CLASS (TYPE 120)

Name	No.	Builders	Laid down	Launched	Commissioned
KÖLN	F 220	H. C. Stülcken Sohn, Hamburg	21 Dec 1957	6 Dec 1958	15 Apr 1961
EMDEN	F 221	H. C. Stülcken Sohn, Hamburg	15 Apr 1958	21 Mar 1959	24 Oct 1961
AUGSBURG	F 222	H. C. Stülcken Sohn, Hamburg	29 Oct 1958	15 Aug 1959	7 Apr 1962
KARLSRUHE	F 223	H. C. Stülcken Sohn, Hamburg	15 Dec 1958	24 Oct 1959	15 Dec 1962
LÜBECK	F 224	H. C. Stülcken Sohn, Hamburg	28 Oct 1959	23 July 1960	6 July 1963
BRAUNSCHWEIG	F 225	H. C. Stülcken Sohn, Hamburg	28 July 1960	3 Feb 1962	16 June 1964

Displacement, tons: 2 100 standard; 2 700 full load
Dimensions, feet (metres): 360·5 × 36·1 × 16·7 *(109·9 × 11 × 5·1)*
Guns: 2—3·9 in *(100 mm)*/55 (single mod 1954)
6—40 mm (2 twin and 2 single)
A/S weapons: 2 Bofors 4-barrel DC mortars (72 charges); 4—21 in *(533 mm)* (singles) for A/S torpedoes; 2 DCTs
Mines: Can carry 80
Main engines: Combined diesel and gas turbine plant; 4 MAN 16-cyl diesels; total 12 000 bhp; 2 Brown Boveri gas turbines, 24 000 bhp; total 36 000 bhp; 2 shafts
Speed, knots: 28; 18 economical
Oil fuel, tons: 333
Range, miles: 920 at 28 knots
Complement: 210 (17 officers, 193 men)

Ordered in Mar 1957. All ships of this class are named after towns in German Federal Republic. Form 2nd Frigate Squadron.

Electronics: Hollandse Signaalapparaten FCS for Bofors A/S launchers. M9 torpedo fire control.

Engineering: Each of the two shafts is driven by two diesels coupled and geared to one BBC gas turbine. Cp propellers. A speed of 32 knots is reported to have been attained on full power trials.

Radar: All by Hollandse Signaalapparaten.
Navigation/surface search: One set.
Target designator: One DA 02.
Fire control *(100 mm)*: Two M 45 series.
Fire control *(40 mm)*: Two M 45 series.

LÜBECK *7/1980, Wright and Logan*

Sonar: One PAE/CWE M/F set, hull-mounted.

CORVETTES

5 "THETIS" CLASS (TYPE 420)

Name	No.	Builders	Commissioned
THETIS	P 6052	Rolandwerft, Bremen	1 July 1961
HERMES	P 6053	Rolandwerft, Bremen	16 Dec 1961
NAJADE	P 6054	Rolandwerft, Bremen	12 May 1962
TRITON	P 6055	Rolandwerft, Bremen	10 Nov 1962
THESEUS	P 6056	Rolandwerft, Bremen	15 Aug 1963

Displacement, tons: 732 full load
Dimensions, feet (metres): 229·7 × 27 × 14 *(70 × 8·5 × 4·2)*
Guns: 2—Breda 40 mm L 70 (twin mounting)
A/S weapons: Bofors 375 mm 4-barrelled DC mortar
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 2 MAN diesels; 2 shafts; 6 800 bhp = 19·5 knots
Complement: 64 (4 officers and 60 men)

Najade has computer house before bridge. Form Flotten Dienst Geschwäder with *Hans Bürckner.*

HERMES *1980, L. and L. van Ginderen*

Radar: Navigation/surface warning.

Sonar: ELAC 1BV.

Name	*No.*	*Builders*	*Commissioned*
HANS BÜRKNER	A 1449	Atlaswerke, Bremen	18 May 1963

Displacement, tons: 1 000 full load
Dimensions, feet (metres): 265·2 × 30·8 × 9·2 *(81 × 9·4 × 2·8)*
A/S weapons: 1 DC mortar (4-barrelled); 2 DC racks;
2—21 in *(533 mm)* torpedo tubes
Main engines: 4 MAN diesels; 2 shafts; 13 600 shp = 19·5 knots
Complement: 50

Launched on 16 July 1961. Named after designer of German First World War battleships (1909-18). General purpose utility vessel.

Radar: TRS-N; K-H14.

Sonar: VDS.

HANS BÜRKNER *2/1978, Gerhard Koop*

LIGHT FORCES

Note: An unusual development is the building by Orenstein and Koppel of Lubeck of a 268 ft *(81·75 m)* patrol craft powered by two 4 000 hp diesels giving a speed of 21 knots. Due for completion in June 1981 this boat is being constructed for the Federal German Government, although this may be for another department other than the navy.

0 + 10 TYPE 143 A (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 393 full load
Dimensions, feet (metres): 188·9 × 25·6 × 7·2 *(57·6 × 7·8 × 2·2)*
Missiles: SSM; 4 Exocet; SAM; GD RAM-ASDM (see *note*)
Gun: 1—76 mm OTO Melara (see *note*)
Mines: To lay mines
Main engines: 4 MTU 16V 956 TB91 diesels; 4 shafts; 16 000 hp = 35+ knots
Range, miles: 2 600 at 16 knots
Complement: 34 (4 officers, 30 men)

Ordered mid-1978 from AEG Telefunken with sub-contracting to Lürssen (seven hulls) and Kröger (three hulls). Wooden hulls on aluminium frames. Completion 1982-84. First of class laid down summer 1979. To replace "Zobel" class.

Guns: Gun to be fitted aft—to be removed from Type 143 (aft).

Missiles: SAM system to be fitted when development is complete.

10 TYPE 143 (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
S 61	P 6111	Lürssen, Vegesack	1 Nov 1976
S 62	P 6112	Lürssen, Vegesack	13 Apr 1976
S 63	P 6113	Lürssen, Vegesack	2 June 1976
S 64	P 6114	Lürssen, Vegesack	14 Aug 1976
S 65	P 6115	Kröger, Rendsburg	27 Sep 1976
S 66	P 6116	Lürssen, Vegesack	25 Nov 1976
S 67	P 6117	Kröger, Rendsburg	17 Dec 1976
S 68	P 6118	Lürssen, Vegesack	28 Mar 1977
S 69	P 6119	Kröger, Rendsburg	23 Dec 1977
S 70	P 6120	Lürssen, Vegesack	29 July 1977

Displacement, tons: 391 full load
Dimensions, feet (metres): 188·6 × 24·9 × 8·2 *(57·5 × 7·6 × 2·5)*
Missiles: SSM; 4 Exocet MM 38
Guns: 2—76 mm OTO Melara (see *note*)
Torpedoes: 2—21 in *(533 mm)* wire guided aft
Main engines: 4 MTU diesels; 16 000 hp; 4 shafts = 35+ knots
Range, miles: 1 300 at 30 knots
Complement: 40

AEG Telefunken main contractor with construction by sub-contractors.
Ordered in 1972 as replacements for last ten boats of the "Jaguar" class from 1976 onwards. Final funds allocated 13 July 1972. First laid down late 1972. The first boat, S 61, started trials in Dec 1974. Wooden hulled craft. Launch dates—S 61, 22 Oct 1973; S 62, 21 Mar 1974; S 63, 18 Sep 1974; S 64, 14 Apr 1975; S 65, 15 Jan 1975; S 66, 4 Sep 1975; S 67, 6 Mar 1975; S 68, 17 Nov 1975; S 69, 5 June 1975; S 70, 14 Apr 1976. Now form 2nd S Boat Squadron.

Electronics: Fully automatic data processing command and fire control system.

Guns and missiles: In early 1980s the after 76 mm will be replaced by GD RAM-ASDM SAM system, the guns being transferred to Type 143A boats, Type 143 then being re-designated 143B.

Radar: All by Hollandse Signaal. WM 27 in radome for Exocet, gun and torpedo control.

S 64 *8/1979, L. and L. van Ginderen*

20 TYPE 148 (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders* (see note re Lürssen)	*Commissioned*
S 41	P 6141	C. M. de Normandie, Cherbourg	30 Oct 1972
S 42	P 6142	C. M. de Normandie, Cherbourg	8 Jan 1973
S 43	P 6143	C. M. de Normandie, Cherbourg	9 Apr 1973
S 44	P 6144	C. M. de Normandie, Cherbourg	14 June 1973
S 45	P 6145	C. M. de Normandie, Cherbourg	21 Aug 1973
S 46	P 6146	C. M. de Normandie, Cherbourg	17 Oct 1973
S 47	P 6147	C. M. de Normandie, Cherbourg	13 Nov 1973
S 48	P 6148	C. M. de Normandie, Cherbourg	9 Jan 1974
S 49	P 6149	C. M. de Normandie, Cherbourg	26 Feb 1974
S 50	P 6150	C. M. de Normandie, Cherbourg	27 Mar 1974
S 51	P 6151	C. M. de Normandie, Cherbourg	12 June 1974
S 52	P 6152	C. M. de Normandie, Cherbourg	17 July 1974
S 53	P 6153	C. M. de Normandie, Cherbourg	24 Sep 1974
S 54	P 6154	C. M. de Normandie, Cherbourg	14 Nov 1974
S 55	P 6155	C. M. de Normandie, Cherbourg	7 Jan 1975
S 56	P 6156	C. M. de Normandie, Cherbourg	12 Feb 1975
S 57	P 6157	C. M. de Normandie, Cherbourg	3 Apr 1975
S 58	P 6158	C. M. de Normandie, Cherbourg	22 May 1975
S 59	P 6159	C. M. de Normandie, Cherbourg	24 June 1975
S 60	P 6160	C. M. de Normandie, Cherbourg	6 Aug 1975

Displacement, tons: 265 full load
Dimensions, feet (metres): 154·2 × 23 × 6·9 *(47 × 7 × 2·1)*
Missiles: SSM; 4 Exocet MM 38
Guns: 1—76 mm OTO Melara; 1—40 mm (Bofors)
Main engines: 4 MTU diesels; 4 shafts; 12 000 bhp = 35+ knots
Oil fuel, tons: 39
Range, miles: 600 at 30 knots
Complement: 30 (4 officers, 26 men)

Ordered in October 1970. For completion from 1973 onwards to replace the first 20 of the "Jaguar" class. Eight hulls contracted to Lürssen (S 46, S 48, S 50, S 52, S 54, S 56, S 58, S 60) but all fitted out in France. Steel-hulled craft.

Launch dates: S 41, 27 Sep 1972; S 42, 12 Dec 1972; S 43, 7 Mar 1973; S 44, 5 May 1973; S 45, 3 July 1973; S 46, 21 May 1973; S 47, 20 Sep 1973; S 48, 10 Sep 1973; S 49 11 Jan 1974; S 50, 10 Dec 1973; S 51, 26 Apr 1974; S 52, 25 Mar 1974; S 53, 4 July 1974; S 54, 8 July 1974; S 55, 15 Nov 1974; S 56, 30 Oct 1974; S 57, 13 Feb 1975; S 58, 26 Feb 1975; S 59, 15 May 1975; S 60, 26 May 1975.

Electronics: Thomson-CSF, Vega-Pollux PCET control system, controlling missiles, torpedoes and guns.

Radar: Navigation: Three RM 20.
Air and surface search/target designator: Triton G-band.
Tracking: Pollux I band.

Squadrons: 3rd: S 41-50. 5th: S 51-60.

S 41 *8/1979, L. and L. van Ginderen*

S 48 *9/1978, Gerhard Koop*

10 "ZOBEL" CLASS (TYPE 142 FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
ZOBEL	P 6092	Lürssen, Vegesack	12 Dec 1961
WIESEL	P 6093	Lürssen, Vegesack	25 June 1962
DACHS	P 6094	Lürssen, Vegesack	25 Sep 1962
HERMELIN	P 6095	Kröger, Rendsburg	28 Nov 1962
NERZ	P 6096	Lürssen, Vegesack	11 Jan 1963
PUMA	P 6097	Kröger, Rendsburg	21 Dec 1962
GEPARD	P 6098	Lürssen, Vegesack	18 Apr 1963
HYANE	P 6099	Kröger, Rendsburg	10 May 1963
FRETTCHEN	P 6100	Lürssen, Vegesack	26 June 1963
OZELOT	P 6101	Lürssen, Vegesack	25 Oct 1963

Displacement, tons: 220 full load
Dimensions, feet (metres): 139·7 × 22·9 × 9·5 *(42·6 × 7 × 2·9)*
Guns: 2—40 mm Bofors L 70 (single)
Torpedo tubes: 2—21 in *(533 mm)* for Seal wire-guided torpedoes
Main engines: 4 Mercedes-Benz (MTU) 20-cyl diesels; 4 shafts; 12 000 bhp = 35+ knots
Complement: 30 (4 officers, 26 men)

Originally units of the "Jaguar" class, but, after conversion, known as the "Zobel" class. Form 7th Squadron. Will probably pay off in 1982-84 as Type 143A comes into service.

Conversions: *Zobel* 1 Mar 1971-26 May 1972; *Wiesel* 13 May 1970-6 July 1971; *Dachs* 6 Apr 1970-24 May 1971; *Hermelin* 1 Sep 1969-8 Mar 1971; *Nerz* 7 Dec 1970-2 Feb 1972; *Puma* 14 Sep 1970-5 Nov 1971; *Gepard* 26 Oct 1970-18 Jan 1972; *Hyane* 7 Jan 1971-26 May 1972; *Frettchen* 18 June 1969-8 Mar 1971; *Ozelot* 3 Aug 1970-16 Aug 1971.

Radar: Fire control: Two M 20 series in radome.

FRETTCHEN *6/1979, Michael D. J. Lennon*

AMPHIBIOUS FORCES

22 TYPE 520 (LCUs)

FLUNDER L 760	**SCHLEI** L 765	**BUTT** L 788	**FORELLE** L 794
KARPFEN L 761	**STÖR** L 766	**BRASSE** L 789	**INGER** L 795
LACHS L 762	**TÜMMLER** L 767	**BARBE** L 790	**MAKRELE** L 796
PLOTZE L 763	**WELS** L 768	**DELPHIN** L 791	**MURÄNE** L 797
ROCHEN L 764	**ZANDER** L 769	**DORSCH** L 792	**RENKE** L 798
		FELCHEN L 793	**SALM** L 799

Displacement, tons: 400 full load
Dimensions, feet (metres): 131·2 × 28·9 × 7·2 *(40 × 8·8 × 2·2)*
Guns: 2—20 mm (see *Guns* notes)
Main engines: 2 diesels; 2 shafts; 1 020 bhp = 12 knots
Complement: 17

Similar to the US LCU (Landing Craft Utility) type. Provided with bow and stern ramp. Built by Howaldtswerke, Hamburg, 1965-66. Can carry 160 tons load. *Inger* employed for seamanship training. *Renke* and *Salm* in reserve.

Guns: Have been rearmed with two modern 20 mm (twin).

DORSCH *1979, L. and L. van Ginderen*

MINE WARFARE FORCES

18 "LINDAU" CLASS (TYPE 331, MINEHUNTERS; TYPE 351, TROIKA) (MINESWEEPERS—COASTAL and MINEHUNTERS)

Name	No.	Builders	Commissioned
GÖTTINGEN	M 1070	Burmester, Bremen	31 May 1958
KOBLENZ	M 1071	Burmester, Bremen	8 July 1958
LINDAU	M 1072	Burmester, Bremen	24 Apr 1958
SCHLESWIG*	M 1073	Burmester, Bremen	30 Oct 1958
TÜBINGEN	M 1074	Burmester, Bremen	25 Sep 1958
WETZLAR	M 1075	Burmester, Bremen	20 Aug 1958
PADERBORN*	M 1076	Burmester, Bremen	16 Dec 1958
WEILHEIM	M 1077	Burmester, Bremen	28 Jan 1959
CUXHAVEN	M 1078	Burmester, Bremen	11 Mar 1959
DÜREN*	M 1079	Burmester, Bremen	22 Apr 1959
MARBURG	M 1080	Burmester, Bremen	11 June 1959
KONSTANZ*	M 1081	Burmester, Bremen	23 July 1959
WOLFSBURG*	M 1082	Burmester, Bremen	8 Oct 1959
ULM*	M 1083	Burmester, Bremen	7 Nov 1959
FLENSBURG	M 1084	Burmester, Bremen	3 Dec 1959
MINDEN	M 1085	Burmester, Bremen	22 Jan 1960
FULDA	M 1086	Burmester, Bremen	5 Mar 1960
VÖLKLINGEN	M 1087	Burmester, Bremen	21 May 1960

* Troika ships

Displacement, tons: 463 full load (Hunters); (465 Troika)
Dimensions, feet (metres): 154·5 × 27·2 × 9·8 (9·2 Troika)
(47·1 × 8·3 × 3) (2·8 Troika)
Gun: 1—40 mm/70 Bofors
Main engines: 2 Maybach (MTU) diesels; 2 shafts; 4 000 bhp = 16·5 knots
Range, miles: 850 at 16·5 knots
Complement: 43 (5 officers, 38 men) (Hunters)
44 (4 officers, 40 men) (Troika)

Lindau, first Federal German built vessel for the Federal German Navy since the Second World War, launched on 16 February 1957. Basically of NATO type but modified for German requirements. The hull is of wooden construction, laminated with plastic glue. The engines are of non-magnetic materials. The first six, *Göttingen, Koblenz, Lindau, Schleswig, Tubingen* and *Wetzlar*, were modified with lower bridges in 1958-59. *Schleswig* was lengthened by 6·8 ft *(2·07 m)* in 1960—all others in 1960-64.

Minehunter conversions: (Type 331) Completion dates: *Fulda* 1969, *Flensburg* 12 Sep 1972, *Lindau* 10 Feb 1978, *Tübingen* 20 Mar 1978, *Minden* 31 May 1978, *Koblenz* 21 June 1978, *Wetzlar* 6 Oct 1978, *Weilheim* 17 Nov 1978, *Gottingen* 19 June 1978, *Völklingen* 15 May 1979, *Cuxhaven* 6 June 1979, *Marburg* 28 June 1979.
This conversion involves the fitting of Plessey 193M sonar and ECA/PAP 105 disposal vehicles. Prime contractor was VFW-Fokker.

Troika conversions: (Type 351) The six ships *(Düren, Konstanz, Paderborn, Ulm, Schleswig* and *Wolfsburg)* not being converted to minehunters are being converted as guidance ships for Troika. Each will guide three of these unmanned minesweeping vehicles. No sonar. The whole of this programme will replace some of the surviving "Schütze" class. *Ulm* paid off 28 July 1978 as first conversion. *Schleswig* 1 Feb 1979, *Wolfsburg* 27 Apr 1979 and *Paderborn* 31 Aug 1979. *Ulm* completed Feb 1980. Eighteen Troika vehicles ordered in 1978 from MAK Kiel, each of 95-100 tons, 24·8 × 4·5 m with diesel hydraulic propulsion.

Squadrons: All operational ships belong to MCM Squadron North Sea.

WEILHEIM *1/1980, Michael D. J. Lennon*

MARBURG *6/1980, Michael D. J. Lennon*

21 "SCHÜTZE" CLASS (TYPE 340-341) (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
CASTOR	M 1051	Abeking and Rasmussen	1962
POLLUX	M 1054	Abeking and Rasmussen	1961
SIRIUS	M 1055	Abeking and Rasmussen	1961
RIGEL	M 1056	Abeking and Rasmussen	1962
REGULUS	M 1057	Abeking and Rasmussen	1962
MARS	M 1058	Abeking and Rasmussen	1960
SPICA	M 1059	Abeking and Rasmussen	1961
SKORPION	M 1060	Abeking and Rasmussen	1963
SCHÜTZE	M 1062	Abeking and Rasmussen	1959
WAAGE	M 1063	Abeking and Rasmussen	1962
DENEB	M 1064	Schürenstedt	1961
JUPITER	M 1065	Schürenstedt	1961
ATAIR	M 1067	Schlichting, Travemünde	1961
WEGA	M 1069	Abeking and Rasmussen	1963
PERSEUS	M 1090	Schlichting, Travemünde	1961
PLUTO	M 1092	Schürenstedt	1960
NEPTUN	M 1093	Schlichting, Travemünde	1960
WIDDER	M 1094	Schürenstedt	1960
HERKULES	M 1095	Schlichting, Travemünde	1960
FISCHE	M 1096	Abeking and Rasmussen	1960
GEMMA	M 1097	Abeking and Rasmussen	1960

Displacement, tons: 305 full load
Dimensions, feet (metres): 155·5 × 22·9 × 7·2 *(47·4 × 7 × 2·2)*
Gun: 1—40 mm
Main engines: 2 diesels; 4 500 bhp = 15+ knots
Range, miles: 2 000 at 13 knots
Complement: 36 (4 officers, 32 men)

Thirty originally built between 1959 and 1964. (Ex-*Uranus* is now a Federal German Navy League ship in Trier). The design is a development of the "R" boats of World War II. Formerly classified as inshore minesweepers, but re-rated as fast minesweepers in 1966. Form the 1st and 5th MCM Squadrons. Some to be replaced by "Lindau" class fitted for Troika guidance in early 1980s and others by new Type 343.

Radar: TRS-N.

Transfer: *Capella, Krebs, Orion, Steinbock* and *Uranus* transferred to Deutscher Marinebund. *Algol* is training vessel at the damage control school, *Mira* is training vessel at Technische Marineschule and *Pegasus* was sold to HDW Kiel.

CASTOR *10/1979, L. and L. van Ginderen*

1 "SCHÜTZE" CLASS (TYPE 732) (DIVER—SUPPORT SHIP)

Name	*No.*	*Builders*	*Commissioned*
STIER	Y 849	Abeking and Rasmussen	1961

Details as for "Schütze" class with deckhouse and recompression chamber added. Original pennant number M 1061. Operates clearance divers.

STIER (with recompression chamber) *10/1979, L. and L. van Ginderen*

10 "FRAUENLOB" CLASS (TYPE 394) (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
FRAUENLOB	M 1652	Krögerwerft, Rendsburg	1966
NAUTILUS	M 1653	Krögerwerft, Rendsburg	1966
GEFION	M 1654	Krögerwerft, Rendsberg	1967
MEDUSA	M 1655	Krögerwerft, Rendsburg	1967
UNDINE	M 1656	Krögerwerft, Rendsburg	1967
MINERVA	M 1657	Krögerwerft, Rendsburg	1967
DIANA	M 1658	Krögerwerft, Rendsburg	1967
LORELEY	M 1659	Krögerwerft, Rendsburg	1968
ATLANTIS	M 1660	Krögerwerft, Rendsburg	1968
ACHERON	M 1661	Krögerwerft, Rendsburg	1969

Displacement, tons: 246 full load
Dimensions, feet (metres): 124·6 × 26·9 × 6·6 *(38 × 8·2 × 2)*
Gun: 1—40 mm
Mines: Laying capability
Main engines: 2 diesels; 2 shafts; 2 000 bhp = 12+ knots
Complement: 25 (2 officers, 23 men)

Launched in 1965-67. Originally designed coast guard boats with W numbers. Rated as inshore minesweepers in 1968 with the M numbers. All subsequently allocated Y numbers and later re-allocated M numbers. 7th MCM Squadron. All have navigation radar only.

MINERVA (old number) *1977, J. A. Verhoog*

8 "ARIADNE" CLASS (TYPE 393) (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
ARIADNE	M 2650	Krögerwerft, Rendsburg	1961
FREYA	M 2651	Krögerwerft, Rendsburg	1962
VINETA	M 2652	Krögerwerft, Rendsburg	1962
HERTHA	M 2653	Krögerwerft, Rendsburg	1962
NYMPHE	M 2654	Krögerwerft, Rendsburg	1963
NIXE	M 2655	Krögerwerft, Rendsburg	1963
AMAZONE	M 2656	Krögerwerft, Rendsburg	1963
GAZELLE	M 2657	Krögerwerft, Rendsburg	1963

Displacement, tons: 252 full load
Dimensions, feet (metres): 124·6 × 25·3 × 7·2 *(38 × 7·7 × 2·2)*
Gun: 1—40 mm
Mines: Laying capability
Main engines: 2 diesels; 2 shafts; 2 000 bhp = 14 knots
Range, miles: 740 at 14 knots
Complement: 25 (2 officers, 23 men)

All launched from April 1960 *(Ariadne)*. Formerly classified as patrol boats but re-rated as inshore minesweepers in 1966, and given new M numbers in January 1968, Y numbers in 1970, and M numbers once more in 1974. 3rd MCM Squadron. All have navigation radar only.

GAZELLE *2/1978, Gerhard Koop*

0 + 10 MINESWEEPING BOATS (TYPE 343)

To commission after 1983. In addition plans for a further class, Type 332, to relieve Type 331 in late 1980s is also reported.

1 TRIALS MINESWEEPER

Name	*No.*	*Builders*	*Commissioned*
HOLNIS	Y 836 (ex-M 2651)	Abeking and Rasmussen	1966

Displacement, tons: 180
Dimensions, feet (metres): 116·8 × 24·3 × 6·9 *(35·6 × 7·4 × 2·1)*
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 shafts; 2 000 bhp = 14·5 knots
Complement: 21

Now serving for trials and evaluation. *Holnis* was launched on 22 May 1965 as the prototype of a new design projected as a class of 20 such vessels but she is the only unit of this type, the other 19 boats having been cancelled. Hull number changed from M 2651 to Y 836 in 1970.

HOLNIS *7/1978, Gerhard Koop*

1 "NIOBE" CLASS (MINESWEEPER—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
HANSA	Y 806	Krögerwerft, Rendsburg	1958

Displacement, tons: 150 standard; 180 full load
Dimensions, feet (metres): 115·2 × 21·3 × 5·6 *(35·1 × 6·5 × 1·7)*
Gun: 1—40 mm
Mines: Laying capability
Main engine: 1 Mercedes-Benz (MTU) diesel; 1 shaft; 950 bhp = 14 knots
Complement: 19

Hansa serves as support ship for clearance divers. *Niobe* paid off and sold in 1977.

HANSA *1975, Federal German Navy*

SERVICE FORCES

11 "RHEIN" CLASS (TYPE 401-2-3) (DEPOT SHIPS)

Name	*No.*	*Builders*	*Commissioned*
ISAR	A 54	Blohm and Voss	25 Jan 1964
LAHN	A 55	Flender, Lübeck	24 Mar 1964
LECH	A 56	Flender, Lübeck	8 Dec 1964
RHEIN	A 58	Schliekerwerft, Hamburg	6 Nov 1961
ELBE	A 61	Schliekerwerft, Hamburg	17 Apr 1962
MAIN	A 63	Lindenau, Kiel	29 June 1963
SAAR	A 65	Norderwerft, Hamburg	11 May 1963
NECKAR	A 66	Lürssen, Vegesack	7 Dec 1963
MOSEL	A 67	Schliekerwerft, Hamburg	8 June 1963
WERRA	A 68	Lindenau, Kiel	2 Sep 1964
DONAU	A 69	Schlichting, Travemünde	23 May 1964

Displacement, tons: 2 940 full load
except *Lahn* and *Lech* 2 890 full load
Dimensions, feet (metres): 322·1 *(Lahn* and *Lech* 322·8*)* × 38·8 × 14·4/19·7
(98·2 (Lahn and *Lech 98·4)* × *11·8* × *4·4/6)*
Guns: 2—3·9 in *(100 mm)*; none in *Lahn, Lech*; 4—40 mm
Main engines: 6 Maybach or Daimler (MTU) diesels; 14 400 hp; diesel-electric drive in *Isar, Lahn, Lech, Mosel, Saar* 11 400 bhp; 2 shafts
Speed, knots: 20·5, 15 economical
Range, miles: 1 625 at 15 knots
Oil fuel, tons: 334
Complement: 153 (163, *Elbe* and *Werra*; 125, *Saar, Mosel* and *Isar*; 114 *Lahn* and *Lech*)

Originally a class of 13. Rated as depot ships for minesweepers *(Isar, Mosel, Saar)*, submarines *(Lahn, Lech)*, and fast attack craft (others) but these ships with their 3·9-in *(100 mm)* guns could obviously be used in lieu of frigates. *Isar* in reserve.

Conversion: *Lahn* major conversion in 1975.

Launch dates: *Donau* 26 Nov 1960, *Elbe* 5 May 1960, *Isar* 14 July 1962, *Lahn* 21 Nov 1961, *Lech* 4 May 1962, *Main* 23 July 1960, *Mosel* 15 Dec 1960, *Neckar* 26 June 1961, *Rhein* 10 Feb 1959, *Saar* 11 Mar 1961, *Werra* 26 Mar 1963.

Operation: *Saar*, 1st MCM Squadron; *Mosel*, 5th MCM Squadron; *Elbe*, 2nd FPB Squadron; *Rhein*, 3rd FPB Squadron; *Main*, 5th FPB Squadron; *Neckar* and *Werra*, 7th FPB Squadron; *Donau* FPB support; *Lahn*, 1st Submarine Squadron; *Lech*, 3rd Submarine Squadron.

Radar: All by Hollandse Signaal. Search: HSA DA 02.
Fire control: Two HSA M 45 for 100 mm and 40 mm.
Navigation: One set.

Sonar: One hull-mounted.

Transfer: *Weser* to Greece 1975. *Rühr* to Turkey 1976.

Type allocations: Type 401—*Rhein, Elbe, Main, Neckar, Werra, Donau*. Type 402—*Isar, Saar, Mosel*. Type 403—*Lahn, Lech*.

SAAR *7/1980, Michael D. J. Lennon*

2 Ex-US "ARISTAEUS" CLASS (REPAIR SHIPS)

ODIN (ex-USS *Ulysses*, ARB 9, ex-*LST 967*) A 512
WOTAN (ex-USS *Diomedes*, ARB 11, ex-*LST 1119*) A 513

Displacement, tons: 1 625 light; 4 325 full load
Dimensions, feet (metres): 328 × 50 × 11 *(100 × 15·2 × 3·4)*
Main engines: 2 General Motors diesels, 2 shafts; 1 700 bhp = 11·6 knots
Oil fuel, tons: 600
Range, miles: 2 000 at 9 knots
Complement: 187

Repair ships. Transferred under MAP in June 1961.
Odin commissioned in January 1966 and *Wotan* on 2 December 1965. Both now civilian-manned.

WOTAN *1975, Federal German Navy*

2 TYPE 704 (REPLENISHMENT TANKERS)

Name	*No*	*Builder*	*Commissioned*
SPESSART (ex-*Okapi*)	A 1442	Kröger, Rendsburg	1974
RHÖN (ex-*Okene*)	A 1443	Kröger, Rendsburg	1974

Displacement, tons: 14 169 full load
Measurement, tons: 6 103 grt; 10 800 deadweight
Dimensions, feet (metres): 427·1 × 63·3 × 26·9 *(130·2 × 19·3 × 8·2)*
Main engines: 8 000 hp = 16 knots
Complement: 42

Completed for Terkol Group as Tankers. Acquired in 1976 for conversion which started in January 1977, *(Spessart* at Bremerhaven, *Rhön* at Kröger). The former commissioned for naval service on 5 September 1977 and the latter on 23 September 1977. Unarmed and civilian manned.

RHÖN *9/1979, Gerhard Koop*

1 REPLENISHMENT TANKER (TYPE 766)

Name	*No.*	*Builders*	*Commissioned*
EIFEL (ex-*Friedrich Jung*)	A 1429	Norderwerft, Hamburg	27 May 1963

Displacement, tons: 6 647
Dimensions, feet (metres): 333·9 × 47·2 × 23·3 *(101·8 × 14·4 × 7·1)*
Main engines: 3 360 hp = 13 knots
Complement: 40

Launched on 2 April 1958. Purchased in 1963 for service in the Federal German Navy.

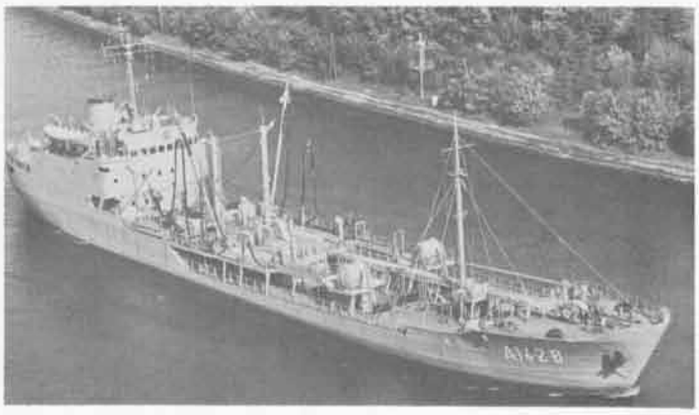
EIFEL *4/1978, Gerhard Koop*

1 REPLENISHMENT TANKER (TYPE 766)

Name	No.	Builders	Commissioned
HARZ (ex-*Claere Jung*)	A 1428	Norderwerft, Hamburg	1953 (see note)

Displacement, tons: 5 381 tons
Dimensions, feet (metres): 302·7 × 43·5 × 22 *(92·3 × 13·2 × 6·7)*
Main engines: 2 520 hp = 12 knots
Complement: 40

Launched 2 September 1953 and purchased in 1963 for service as a tanker, commissioning on 27 May 1963.



HARZ *1978, J. A. Verhoog*

4 "WALCHENSEE" CLASS (TYPE 703) (REPLENISHMENT TANKERS)

Name	No.	Builders	Commissioned
WALCHENSEE	A 1424	Lindenau, Kiel	29 June 1966
AMMERSEE	A 1425	Lindenau, Kiel	2 Mar 1967
TEGERNSEE	A 1426	Lindenau, Kiel	23 Mar 1967
WESTENSEE	A 1427	Lindenau, Kiel	6 Oct 1967

Displacement, tons: 2 191
Dimensions, feet (metres): 235·8 × 36·7 × 13·5 *(71·9 × 11·2 × 4·1)*
Main engines: Diesels; 2 shafts; 1 370 bhp = 12·6 knots

Launched on 10 July 1965, 9 July 1966, 22 October 1966 and 8 April 1967 respectively.

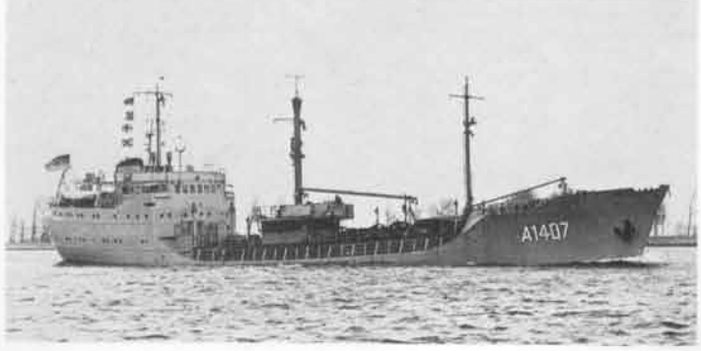
WESTENSEE *10/1979, L. and L. van Ginderen*

1 TYPE 763 (SUPPORT TANKER)

Name	No.	Builders	Commissioned
WITTENSEE (ex-*Sioux*)	A 1407	Lindenau, Kiel	26 Mar 1959

Displacement, tons: 1 854 full load
Dimensions, feet (metres): 221·4 × 32 × 14·1 *(67·5 × 9·8 × 4·3)*
Main engines: 2 diesels; 1 250 bhp; 2 shafts = 12 knots
Complement: 23

Launched on 23 September 1958.



WITTENSEE *11/1980, L. and L. van Ginderen*

8 "LÜNEBURG" CLASS (TYPE 701) (SUPPORT SHIPS)

Name	No.	Builders	Commissioned
LÜNEBURG*	A 1411	Flensburger, Schiffbau	31 Jan 1966
COBURG	A 1412	Flensburger Schiffbau	9 July 1968
FREIBURG	A 1413	Blohm and Voss	27 May 1968
GLÜCKSBURG*	A 1414	Flensburger, Schiffbau	9 July 1968
SAARBURG*	A 1415	Blohm and Voss	30 July 1968
NIENBURG	A 1416	Vulkan, Bremen	1 Aug 1968
OFFENBURG	A 1417	Blohm and Voss	27 May 1968
MEERSBURG*	A 1418	Vulkan, Bremen	25 June 1968

*conversions

Displacement, tons: 3 483
Dimensions, feet (metres): 341·2 × 43·3 × 13·8 *(104 × 13·2 × 4·2)*
(374·9 ft *(114·3 m)* for lengthened ships)
Guns: 4—40 mm (cocooned)
Main engines: 2 Maybach (MTU) diesels; 2 shafts; 5 600 bhp = 17 knots
Complement: 71

Modernisation: Four of this class have been lengthened by 33·7 ft *(10·3 m)* and modernised to serve the missile installations of the new classes of Fast Attack Craft and converted destroyers, including MM 38 Exocet maintenance. *Saarburg* completed 1975—*Luneburg* 1976—*Meersburg* 1976—*Glücksburg* 1977. Most serve as support ships for fast attack craft or MCM squadrons.

NIENBURG *6/1980, John G. Callis*

2 "WESTERWALD" CLASS (TYPE 760) (AMMUNITION TRANSPORTS)

Name	No.	Builders	Commissioned
WESTERWALD	A 1435	Lübecker, Masch	11 Feb 1967
ODENWALD	A 1436	Lübecker, Masch	23 Mar 1967

Displacement, tons: 3 460
Dimensions, feet (metres): 347·8 × 46 × 12·2 *(106 × 14 × 3·7)*
Guns: 4—40 mm
Main engines: 2 MTU diesels; 6 200 bhp; 2 shafts = 17 knots
Complement: 52 *(Westerwald)*; 35 *(Odenwald)*

Odenwald was launched on 5 May 1966 and *Westerwald* was launched on 25 February 1966.

WESTERWALD *4/1976, Dr. Giorgio Arra*

2 "SACHSENWALD" CLASS (TYPE 762) (MINE TRANSPORTS)

Name	No.	Builders	Commissioned
SACHSENWALD	A 1437	Blohm and Voss, Hamburg	20 Aug 1969
STEIGERWALD	A 1438	Blohm and Voss, Hamburg	20 Aug 1969

Displacement, tons: 3 380 full load
Dimensions, feet (metres): 363·8 × 45·6 × 12·5 *(110·9 × 13·9 × 3·8)*
Guns: 4—40 mm (2 twin mountings)
Mines: Laying capacity
Main engines: 2 MTU diesels; 2 shafts; 6 200 hp = 17 knots
Range, miles: 3 500
Complement: 62

Built as mine transports. Laid down on 1 August 1966 and 9 May 1966. Launched on 10 December 1966 and 10 March 1967. Have mine ports in the stern and can be used as minelayers.

SACHSENWALD *10/1979, L. and L. van Ginderen*

4 "705" CLASS (WATER BOATS)

FW 1 Y 864 **FW 4** Y 867 **FW 5** Y 868 **FW 6** Y 869

Measurement, tons: 350 deadweight
Dimensions, feet (metres): 144·4 × 25·6 × 8·2 *(44·1 × 7·8 × 2·5)*
Main engine: MWM diesel, 230 bhp = 9·5 knots

Originally class of six built in pairs by Schiffbarges, Unterweser, Bremerhaven; H. Rancke, Hamburg and Jadewerft, Wilhelmshaven, in 1963-64.

TRAINING SHIPS

1 "DEUTSCHLAND" CLASS (TYPE 440)

Name	*No.*	*Builders*	*Commissioned*
DEUTSCHLAND	A 59	Nobiskrug, Rendsburg	25 May 1963

Displacement, tons: 5 685 full load
Dimensions, feet (metres): 453·3 × 52·5 × 19 *(138·2 × 16 × 5·8)*
Guns: 4—3·9 in *(100 mm)*/55 (single Mod 1954); 6—40 mm (2 twin, 2 single)
A/S weapons: 2 Bofors 4-barrel rocket launchers; 4—21 in *(533 mm)* torpedo tubes
Torpedo tubes: 2—21 in *(533 mm)* (surface targets)
Mines: Laying capacity
Main engines: 8 000 bhp MTU diesels (2 Daimler-Benz and 2 Maybach); 2 shafts with vp propellers; 8 400 shp double reduction geared turbines; 1 shaft
Boilers: 2 Wahodag; 768 psi *(54 km/cm²)*; 870°F *(465°C)*
Speed, knots: 22 (3 shafts); 17 (2 shafts) 14 economical (1 shaft)
Oil fuel, tons: 230 furnace, 410 diesel
Range, miles: 6 000 at 17 knots
Complement: 513 (25 officers, 238 men, 250 cadets)

First West German naval ship to exceed the post-war limit of 3 000 tons. Designed with armament and machinery of different types for training purposes. The name originally planned for this ship was *Berlin*. Ordered in 1956. Laid down in 1959 and launched 5 November 1960. Carried out her first machinery sea trials on 15 January 1963.

Electronics: HSA fire control for Bofors A/S launchers and torpedoes.

Radar: All by Hollandse Signaalapparaten.
Navigation/surface warning: SGR 103, 105, 114.
Air warning: One LW-02/3
Target designator: One DA 02.
Fire control: Two M 45 series (M2/2, M4).

Sonar: One ELAC 1BV hull-mounted set.

DEUTSCHLAND *4/1980, Michael D. J. Lennon*

SAIL TRAINING SHIPS

Name	*No.*	*Builders*	*Commissioned*
GORCH FOCK	A 60	Blohm and Voss, Hamburg	17 Dec 1958

Displacement, tons: 1 760 standard; 1 870 full load
Dimensions, feet (metres): 266·6 × 39·2 × 15·8 *(81·3 × 12 × 4·8)*
Main engine: Auxiliary MAN diesel; 880 bhp = 11 knots
Sail area, sq ft: 21 141
Range, miles: 1 990 on auxiliary diesel
Complement: 206 (10 officers, 56 ratings, 140 cadets)

Sail training ship of the improved "Horst Wessel" type. Barque rig. Launched on 23 August 1958.

GORCH FOCK *11/1978, Reinhard Nerlich*

Name	*No.*	*Builders*	*Commissioned*
NORDWIND	Y 834	—	1944

Displacement, tons: 110
Dimensions, feet (metres): 78·8 × 21 × 8·2 *(24 × 6·4 × 2·5)*
Main engine: Diesel; 150 bhp = 8 knots (sail area 2 037·5 sq ft)

Ketch rigged.

There are over 70 other sailing vessels of various types serving for sail training and recreational purposes. *Achat, Alarich, Amsel, Argonaut, Borasco, Brigant, Dankwart, Diamont, Dietrich, Dompfaff, Drossel, Fafnir, Fink, Flibustier, Freibeuter, Geiserich, Gernot, Geuse, Giselher, Gödicke, Gunnar, Gunter, Hadubrand, Hagen, Hartnaut, Hilderbrand, Horand, Hunding, Jaspis, Kaper, Klipper, Korsar, Kuchkuch, Lerche, Likendeeler, Magellan, Meise, Michel, Mime, Mistral, Monsun, Nachtigall, Ortwin, Ostwind, Pampero, Pirol, Ruediger, Samum, Saphir, Schirocco, Seeteufel, Siegfried, Siegmund, Siegura, Smaragd, Star, Stieglitz, Storetbecker, Taifun, Teja, Topas, Tornadon, Totila, Vitalienbrüder, Volker, Walter, Wate, Westwind, Wiking, Wittigo, Zeisig.*

MISCELLANEOUS

7 COASTAL PATROL CRAFT

KW 15 Y 827
KW 16 Y 830
KW 18 Y 832
KW 19 Y 833
KW 17 Y 845
KW 20 Y 846

Displacement, tons: 45 standard; 60 full load
Dimensions, feet (metres): 93·5 × 16·1 × 4·9 *(28·9 × 4·9 × 1·5)*
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 000 bhp = 25 knots
Complement: 14

Built in 1951-53. Of "369" class.

KW 15 *7/1978, Gerhard Koop*

KW 3 Y 829.

Of 112 tons and 8 knots built in 1943.

12 TORPEDO RECOVERY VESSELS

TF 1-6 (Y 851-856)
TF 106 (Y 872)
TF 101-102 (Y 883-884)
TF 107-108(Y873-874)
TF 104 (Y 886)

All of approximately 30-40 tons. TF 1-6 and 106-108 built in 1966, the remainder a deal older.

TF 5 *7/1979, L. and L. van Ginderen*

TUGS

2 SALVAGE TUGS

Name	*No.*	*Builders*	*Commissioned*
HELGOLAND	A 1457	Unterweser, Bremerhaven	8 Mar 1966
FEHMARN	A 1458	Unterweser, Bremerhaven	1 Feb 1967

Displacement, tons: 1 310 standard; 1 643 full load
Dimensions, feet (metres): 223·1 × 41·7 × 14·4 *(68 × 12·7 × 4·4)*
Guns: 2—40 mm (removed in *Helgoland*)
Main engines: Diesel-electric; 4 MWM diesels; 2 shafts; 3 800 hp = 17 knots
Range, miles: 6 000 at 10 knots
Complement: 36-45

Launched on 25 November 1965 and 8 April 1965. Carry fire fighting equipment.

FEHMARN *1974, Federal German Navy—Marineamt*

6 SALVAGE TUGS

Name	*No.*	*Builders*	*Commissioned*
WANGEROOGE	A 1451	Schichau, Bremerhaven	9 Apr 1968
SPIEKEROOG	A 1452	Schichau, Bremerhaven	14 Aug 1968
LANGEOOG	A 1453	Schichau, Bremerhaven	14 Aug 1968
NORDERNEY	A 1455	Schichau, Bremerhaven	15 Oct 1970
JUIST	Y 1664	Schichau, Bremerhaven	1 Oct 1971
BALTRUM	Y 1661	Schichau, Bremerhaven	8 Oct 1968

Displacement, tons: 854 standard; 1 024 full load
Dimensions, feet (metres): 170·6 × 39·4 × 12·8 *(52 × 12·1 × 3·9)*
Gun: 1—40 mm (removed in training ships)
Main engines: Diesel-electric; 2 shafts; 2 400 hp = 14 knots
Range, miles: 5 000 at 10 knots
Complement: 24-35

Duties: *Baltrum* diving training ship (1974). *Norderney, Juist* and *Langeoog* converted and employed as diving training ships 1976-78 (last two completed 1978).

Wangerooge, prototype salvage tug, was launched on 4 July 1966, *Baltrum* on 8 October 1968. Pennant numbers of training ships changed in late 1976.

BALTRUM *1978, J. A. Verhoog*

4 HARBOUR TUGS

Name	*No.*	*Builders*	*Commissioned*
SYLT	Y 820	Schichau, Bremerhaven	1962
FÖHR	Y 821	Schichau, Bremerhaven	1962
AMRUM	Y 822	Schichau, Bremerhaven	1963
NEUWERK	Y 823	Schichau, Bremerhaven	1963

Displacement, tons: 266 standard
Dimensions, feet (metres): 100·7 × 24·6 *(30·6 × 7·5)*
Main engine: 1 Deutz diesel; 800 bhp = 12 knots
Complement: 10

Launched in 1961.

3 HARBOUR TUGS

Name	*No.*	*Builders*	*Commissioned*
NEUENDE	Y 1680	Schichau, Bremerhaven	1971
HEPPENS	Y 1681	Schichau, Bremerhaven	1971
ELLERBEK	Y 1682	Schichau, Bremerhaven	1971

Displacement, tons: 122
Dimensions, feet (metres): 87·2 × 24·3 × 8·5 *(26·6 × 7·4 × 2·6)*
Main engine: 1 MWM diesel; 1 shaft; 800 hp
Speed, knots: 12
Complement: 6

ELLERBEK *6/1978, Stefan Terzibaschitsch*

Harbour Type: There are also nine small harbour tugs all completed in 1958-60:— *Knechtsand* Y 814, *Langeness* Y 819, *Lütje Horn* Y 812, *Mellum* Y 813, *Nordstrand* Y 817, *Plon* Y 802, *Scharhörn* Y 815, *Trischen* Y 818 and *Vogelsand* Y 816.

TRISCHEN *4/1978, Gerhard Koop*

ICEBREAKERS

Name	*No.*	*Builders*	*Commissioned*
HANSE	—	Wärtsilä, Helsinki	13 Dec 1966

Displacement, tons: 2 771
Dimensions, feet (metres): 226·6 × 57 × 28·9 *(69·1 × 17·4 × 8·8)*
Main engines: Diesel-electric; 4 shafts; 7 500 bhp = 16 knots

Laid down on 12 January 1965. Launched on 17 October 1966. Completed on 25 November 1966. Although owned by Federal Germany she sails under the Finnish flag, manned by a Finnish crew. Only when the winter is so severe that icebreakers are needed in the southern Baltic will she be transferred under the German flag and command. She does not belong to the Bundesmarine.

Name	*No.*	*Builders*	*Commissioned*
EISVOGEL	A 1401	J. G. Hitzler, Lauenburg	11 Mar 1961
EISBAR	A 1402	J. G. Hitzler, Lauenburg	1 Nov 1961

Displacement, tons: 560 standard
Dimensions, feet (metres): 125·3 × 31·2 × 15·1 *(38·2 × 9·5 × 4·6)*
Main engines: 2 Maybach diesels; 2 shafts; 2 000 bhp = 14 knots

Launched on 28 April and 9 June 1960 respectively. Icebreaking tugs.

EISBAR *1978, J. A. Verhoog*

AUXILIARY SHIPS

1 RADAR TRIALS SHIP

Name	*No.*	*Builders*	*Commissioned*
OSTE (ex-*Puddefjord*, ex-USN 101)	A 52	Akers Mekaniske V, Oslo	1943

Displacement, tons: 567 gross
Dimensions, feet (metres): 160 × 29·7 × 17 *(48·8 × 9 × 5·2)*
Main engine: 1 Akers diesel; 1 shaft; 1 600 bhp = 12 knots

Taken over from the US Navy. Converted in 1968.

OSTE *8/1976, P. Crichton*

2 RADAR TRIALS SHIPS

Name	*No.*	*Builders*	*Commissioned*
ALSTE (ex-*Mellum*)	A 50	Unterweser, Bremen	1972
OKER (ex-*Hoheweg*)	A 53	Unterweser, Bremen	1972

Measurement, tons: 1 187
Dimensions, feet (metres): 237·8 × 34·4 × 16·1 *(72·5 × 10·5 × 4·9)*
Main engine: Diesel-electric; 1 shaft = 15 knots
Complement: 30

OKER *2/1977, Michael D. J. Lennon*

1 TRIALS SHIP

Name	*No.*	*Builders*	*Commissioned*
WALTHER VON LEDEBUR	Y 841	Burmester, Bremen	1966

Displacement, tons: 725
Dimensions, feet (metres): 206·6 × 34·8 × 8·9 *(63 × 10·6 × 2·7)*
Main engines: Maybach (MTU) diesels; 2 shafts; 5 000 bhp = 19 knots
Complement: 11 + 10 Trials party

Wooden hulled vessel. Trials ship. Launched on 30 June 1966.

WALTHER VON LEDEBUR *10/1975, Reinhard Nerlich*

3 Ex-COASTAL MINESWEEPERS

H.C. OERSTED (ex-*Vinstra*, ex-*NYMS 247*) Y 877
ADOLF BESTELMEYER (ex-*BYMS 2213*) Y 881
RUDOLF DIESEL (ex-*BYMS 2279*) Y 889

Displacement, tons: 270 standard; 350 full load
Dimensions, feet (metres): 136 × 24·5 × 8 *(41·5 × 7·5 × 2·4)*
Main engines: 2 MTU diesels; 2 shafts; 1 000 bhp = 15 knots

Of US YMS type. Built in 1943. *Adolf Bestelmeyer* and *Rudolf Diesel* are used for gunnery trials. *H. C. Oersted* was acquired from the Royal Norwegian Navy and used as degaussing ship.

RUDOLF DIESEL *2/1976, Reinhard Nerlich*

PLANET A 1450. Weapons research ship of 1 943 tons and 13·5 knots. Built in 1965.

WILHELM PULLWER Y 838, **SP 1** Y 837. Trials ships of 160 tons and 12·5 knots. Built in 1966.

HEINZ ROGGENKAMP Y 871. Trials ship of 785 tons and 12 knots. Built in 1952.

HEINZ ROGGENKAMP *1978, Reinhard Nerlich*

FRIEDRICH VOGE Y 888. Trials ship of 179 tons.

FRIEDRICH VOGE *1978, Reinhard Nerlich*

OTTO MEYCKE Y 882 Diving Trials.

TB 1 Y 1678. Diving boat of 70 tons and 14 knots. Built in 1972.

LP 1, 2 and **3.** Battery workshop craft of 180 tons. Built in 1963-73.

FÖRDE Y 1641 **JADE** Y 1642

Tank cleaning vessels. Of 600 tons, completed in 1967.

FÖRDE *8/1975, Stefan Terzibaschitsch*

ARCONA (ex-*Royal Prince*) Y 809
KNURRHAHN Y 811 of 261 tons.

Both accommodation ships. *Arcona* ex-liner.

BARBARA Y 844, lifting ship of 3 500 tons.
HIEV Y 875, **GRIEP** Y 876, floating cranes.

AM 7

A GRP craft of 16·3 × 4·1 × 2·2 metres with a 180 hp diesel completed by Fritz Staack of Lübeck in early 1980.

AM 7 *1980*

COAST GUARD VESSELS

(Bundesgrenzschutz—See)

Note: This paramilitary force consists of about 1 000 men who operate the craft below as well as helicopters.

1 ICEBREAKING TUG

Name	*No*	*Builders*	*Commissioned*
RETTIN	BG 5	Mützelfeldwerft	3 Dec 1976

Measurement, tons: 120 brt
Dimensions, feet (metres): 73·8 × 21·7 × 9·5 *(22·5 × 6·6 × 2·9)*
Main engines: 2 diesels; 590 hp = 9 knots
Complement: 4

Launched 29 October 1976.

RETTIN *9/1977, Gerhard Koop*

8 LARGE PATROL CRAFT

NEUSTADT BG 11
BAD BRAMSTEDT BG 12
UELTZEN BG 13
DUDERSTADT BG 14
ESCHWEGE BG 15
ALSFELD BG 16
BAYREUTH BG 17
ROSENHEIM BG 18

Displacement, tons: 203
Length, feet (metres): 127·1 *(38·5)*
Guns: 2—40 mm
Main engines: 3 MTU diesels; 4 500 hp = 30 knots
Complement: 24

All built between 1969 and late 1970—BG 13 by Schlichting, Travemünde, the remainder by Lürssen, Vegesack. Form two flotillas: BG 11-14 the first and BG 15-18 the second. A third flotilla of smaller craft has been formed.

UELTZEN *1978, Reinhard Nerlich*

FISHERY PROTECTION SHIPS

(Operated by Ministry of Agriculture and Fisheries)

ANTON DOHRN of 1 950 tons and 15 knots
FRITHJOF of 2 150 tons and 15 knots
MEERKATZE of 2 250 tons and 14 knots. Completed 1977
MINDEN of 973 tons and 16 knots
ROTERSAND of 1 000 tons. Built in 1974
SOLEA of 340 tons and 12 knots
UTHÖRN of 110 tons and 9 knots
WALTHER HERTWIG of 2 500 tons and 15 knots

MEERKATZE *5/1980, J. L. M. van der Burg*

SURVEY SHIPS

The following ships operate for the Deutsches Hydrographisches Institut, under the Ministry of Transport.

METEOR (research ship) 3 085 tons, launched 1964, complement 53
KOMET (survey and research) 1 595 tons, launched 1969, complement 42
GAUSS (survey and research) 1 370 tons, completed March 1980, speed 13·5 knots
SÜDEROOG (survey ship) 211 tons, launched 1956, complement 17
ATAIR (survey and wrecks) 148 tons, launched 1962, complement 12
WEGA (survey and wrecks) 148 tons, launched 1962, complement 12
POSEIDON (survey) 1 266 tons, launched 1976, complement 28
VICTOR HENSEN (survey) 1 266 tons, launched 1976, complement 28
SENCKENBURG (research) 165 tons, launched 1976, complement 5

GHANA

Administration

Chief of Defence Staff
Air Vice Marshal Odaate Barnor
Chief of Naval Staff:
Commodore S. G. Obimpeh

Personnel

(a) 1981: 1 360
(b) Voluntary service

Naval Bases

Sekondi (Western Naval Command)
Tema, near Accra (Eastern Naval Command)

Mercantile Marine

Lloyd's Register of Shipping:
104 vessels of 250 428 tons gross

DELETIONS

1977: *Yogaga, Afadzato* ("Ham" class)
1979: *Asuanti* ("ARL" type), *Ejura* ("Ton" class)

CORVETTES

2 "KROMANTSE" CLASS (VOSPER MARK I TYPE)

Name	No.	Builders	Commissioned
KROMANTSE	F 17	Vosper Ltd.	27 July 1964
KETA	F 18	Vickers Ltd (Tyne)	18 May 1965

Displacement, tons: 380 light; 440 standard; 500 full load
Dimensions, feet (metres): 177 × 28·5 × 13 *(54 × 8·7 × 4)*
Guns: 1—4 in; 1—40 mm (see notes)
A/S weapons: 1 Squid triple-barrelled depth charge mortar
Main engines: 2 Bristol Siddeley Maybach (MTU) diesels; 2 shafts; 390 rpm; 7 100 bhp = 20 knots
Oil fuel, tons: 60
Range, miles: 2 000 at 16 knots; 2 900 at 14 knots
Complement: 54 (6 + 3 officers, 45 ratings)

Designed by Vosper Ltd, Portsmouth, a joint venture with Vickers-Armstrong's Ltd, one ship being built by each company. Vosper roll damping fins, and air conditioning throughout excepting machinery spaces. Generators 360 kW. The electrical power supply is 440 volts, 60 cycles ac. A very interesting patrol vessel design, an example of what can be achieved on a comparatively small platform to produce an inexpensive and quickly built anti-submarine vessel. *Kromantse* was launched at the Camber Shipyard, Portsmouth, on 5 September 1963. *Keta* was launched at Newcastle on 18 January 1965.

Radar: Search: Plessey AWS 1.

Refit: Both were fully refitted by Vosper Thornycroft Ltd (a £1·2 million contract) in 1974-75—*Keta* completed in April 1975 and *Kromantse* in September 1975.

Sonar: Both fitted with Type 164 hull-mounted set.

KROMANTSE *9/1975, Vosper Thornycroft*

KETA *4/1975, Dr. Giorgio Arra*

LIGHT FORCES

2 PB 57 TYPE (FAST ATTACK CRAFT—GUN)

Name	No.	Builders	Commissioned
ACHIMOTA	P 28	Lürssen, Vegesack	1980
YOGAGA	P 29	Lürssen, Vegesack	1980

Displacement, tons: 376 full load
Dimensions, feet (metres): 190·6 × 25 × 9·2 *(58·1 × 7·6 × 2·8)*
Guns: 1—76 mm OTO Melara; 1—40 mm Bofors
Main engines: 3 MTU diesels; 11 400 hp; 3 shafts
Range, miles: 350 at 19 knots
Complement: 60

Ordered in 1977. Launched July 1979.

Fire control: Thomson CSF.

Radar: Surveillance and navigation.

ACHIMOTA *1980, Ghana Navy*

2 TYPE TNC 45 (FAST ATTACK CRAFT—GUN)

Name	No.	Builders	Commissioned
DZATA	P 26	Lürssen, Vegesack	25 July 1980
SEBO	P 27	Lürssen, Vegesack	25 July 1980

Displacement, tons: 255
Dimensions, feet (metres): 147·3 × 23 × 7·5 *(44·9 × 7 × 2·3)*
Guns: 2—40 mm L70
Main engines: 2 MTU diesels; 7 200 hp
Range, miles: 1 800 at 16 knots
Complement: 55

Ordered in 1976. *Dzata* laid down 16 January 1978.

DZATA *1980, Ghana Navy*

2 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
DELA	P 24	Ruthof Werft, Mainz	1974
SAHENE	P 25	Ruthof Werft, Mainz	1974

Displacement, tons: 160
Dimensions, feet (metres): 115·5 × 21·3 × 5·9 *(35·2 × 6·5 × 1·8)*
Gun: 1—40 mm

Ordered from Ruthof, Werft (Mainz) BRG in 1973 as part of a class of six. Only these two had been delivered when the builders went bankrupt in 1975.

SAHENE *1978, Ghana Navy*

2 "FORD" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
ELMINA	P 13	Yarrow, Scotstoun	1962
KOMENDA	P 14	Yarrow, Scotstoun	Dec 1962

Displacement, tons: 120 standard; 142 full load
Dimensions, feet (metres): 117·5 × 20 × 7 *(35·8 × 6·1 × 2·1)*
Gun: 1—40 mm/60 Bofors
A/S weapons: DCTs
Main engines: 2 MTU (Maybach) diesels; type MD 16 V 53 87 B 90; 2 shafts = 3 000 hp at 1 790 rpm = 20 knots
Range, miles: 1 000 at 13 knots
Complement: 32 (3 officers, 29 ratings)

KOMENDA *1969, Ghana Navy*

4 "SPEAR 2" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 4·5
Dimensions, feet (metres): 30 × 9·5 × 2·8 *(9·1 × 2·9 × 0·8)*
Guns: 3—3 in MGs
Main engines: 2 diesels; 2 shafts; 360 hp = 29 knots
Range, miles: 250 at 26 knots
Complement: 3

Supplied by Fairey Marine, UK in 1978.

SERVICE CRAFT

2 ROTORK CRAFT

One FPB 412 and one STW 408.

GREECE

Ministerial

Minister of National Defence:
Evangelos Averof

Headquarters' Appointments

Chief Hellenic Navy:
Vice-Admiral S. Konofaos
Deputy Chief:
Rear-Admiral J. Fakidis

Fleet Command

Commander of the Fleet:
Vice-Admiral T. Deyiannis

Senior Appointments

Deputy Chief National Defence General Staff:
Vice-Admiral G. Dimitropoulos
Commander, Navy Training Command:
Rear-Admiral D. Troupakis
Commander, Navy Logistics Command:
Rear-Admiral G. Typaldos-Xydias

Diplomatic Representation

Naval Attaché in Ankara:
Captain S. Karatsolis
Naval Attaché in Bonn:
Captain S. Antoniadis
Naval Attaché in Cairo:
Captain D. Tzevelekis
Naval Attaché in London:
Captain A. Theoharis
Naval Attaché in Washington:
Captain D. Lismanis

Personnel

(a) 1981: 19 500 (2 500 officers and 17 000 ratings)
(b) 2 years' national service

Naval Bases

Salamis and Suda Bay

Naval Commands

Commander of the fleet has under his flag all combatant ships. Navy Logistic Command is responsible for the bases at Salamis and Suda Bay, the Supply Centre and all auxiliary ships. Navy Training Command is in charge of the Naval Officers' Academy, three Petty Officers' Schools, two training centres and a training ship.

Naval Districts

Aegean, Ionian and Northern Greece

Naval Aviation

4—Alouette III helicopters (No 1 Squadron).
10—AB 212 ASW helicopters (No 2 and 3 Squadrons).
14—HU-16B Albatros are operated under naval command by mixed Air Force and Navy crews (353 Squadron, Eleusis).
Note: All helicopters have naval crews.

Prefix to Ships' Names

H.S. (Hellenic Ship)

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Patrol Submarines	10	—
Destroyers	15	—
Frigates	4	1 (3)
Fast Attack Craft—Missile	14	—
Fast Attack Craft—Torpedo	12	—
Coastal Patrol Craft	11	—
Landing Ships	13	—
LCUs	8	—
LCTs	2	—
Minor Landing Craft	61	—
Minelayers—Coastal	2	—
Minesweepers—Coastal	14	—
Survey Vessels	3	1
Depot Ship	1	—
Training Ship	1	—
Support Tankers	2	—
Harbour Tankers	4	—
Lighthouse Tenders	2	—
Tugs	16	—
Netlayer	1	—
Water Boats	7	—
Auxiliary Transports	2	—

Mercantile Marine

Lloyd's Register of Shipping:
3 922 vessels of 39 471 744 tons gross

DELETIONS

Submarines

1975 *Posydon*
1980 *Triaina*

Corvettes

1976 *Mahitis, Navmachos*
1977 *Pyrpolitis, Polemistis, Armatolos*

Light Forces

1974 *Dolphin, Drakon, Phoenix, Polikos, Polidefkis*
1976 *Aiolos*
1977 *A. Pezopoulos*
1978 *Karnavias, Ira*
1979 *Astrapi, P. Arslanoglou, P. Chadzikonstandis*

Amphibious Forces

1977 *Chios, Limnos, Samos*

Survey Vessels

1976 *Hephestos*
1977 *Anemos*

Harbour Tankers

1975 *Serre* (target)
1977 *Orion, Sirios, Zeus*
1980 *Prometheus*

Lighthouse Tenders

1976 *St. Lykoudis* (first), *Skyros*

Auxiliaries

1976 *Stimphalia, Trihonis*
1977 *Sotir, Sakipis*
1978 *Animos, Patraikos*
1979 *Samson, Perseus, Keravnos, Ios*

PENNANT LIST

Submarines

S 110 Glavkos
S 111 Nereus
S 112 Triton
S 113 Proteus
S 114 Papanikolis
S 115 Katsonis
S 116 Posydon
S 117 Amphitrite
S 118 Okeanos
S 119 Pontos

Destroyers and Frigates

D 01 Aetos
D 03 Aegeon
D 06 Aspis
D 16 Velos
D 28 Thyella
D 31 Ierax
D 54 Leon
D 56 Lonchi
D 63 Navarinon
D 67 Panthir
D 85 Sfendoni
D 210 Themistocles
D 211 Miaoulis
D 212 Kanaris
D 213 Kountouriotis
D 214 Sachtouris
D 215 Tompazis
D 216 Apostolis
F 450 Elli

Minelayers

N 04 Aktion
N 05 Amvrakia

Minesweepers

M 202 Atalanti
M 205 Antiopi
M 206 Faedra
M 210 Thalia
M 211 Alkyon
M 213 Klio
M 214 Avra
M 240 Pleias
M 241 Kichli
M 242 Kissa
M 246 Aigli
M 247 Dafni
M 248 Aedon
M 254 Niovi

Light Forces

P 14 Anthipoploiarhos Anninos
P 15 Ipoploiarhos Arliotis
P 16 Ipoploiarhos Konidis
P 17 Ipoploiarhos Batsis
P 20 Antiploiarhos Laskos
P 21 Plotarhis Blessas
P 22 Ipoploiarhos Mikonios
P 23 Ipoploiarhos Troupakis
P 24 Simeoforos Kavaloudis
P 25 Anthipoploiarhos Kostakos
P 26 Ipoploiarhos Deyiannis
P 27 Simeoforos Zenos
P 28 Simeoforos Simitzopoulos
P 29 Simeoforos Starakis
P 50 Hesperos
P 51 Kataigis
P 52 Kentauros
P 53 Kyklon
P 54 Lelaps
P 55 Skorpios
P 56 Tyfon
P 61 E. Panagopoulos 1
P 267 Dilos
P 268 Knossos

Light Forces

P 269 Lindos
P 286 Adamidis
P 288 Arhikelefstis Stassis
P 290 N. I. Goulandris 2
P — Andromeda
P — N. I. Goulandris 1
P — Kastor
P — Kyknos
P — Pigassos
P — Toxotis
P — Kelefstis Stamou
P — Diopos Antoniou
P — E. Panagopoulos 2
P — E. Panagopoulos 3

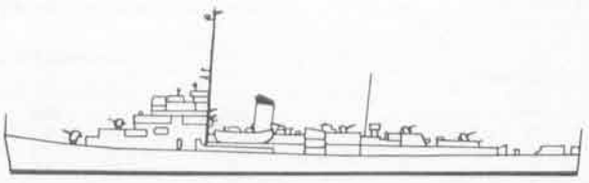
Amphibious Forces

L 104 Inousse
L 116 Kos
L 144 Syros
L 145 Kassos
L 146 Karpathos
L 147 Kimolos
L 148 Kea
L 149 Kithnos
L 150 Sifnos
L 151 Skopelos
L 152 Skiathos
L 153 Nafkratoussa
L 154 Ikaria
L 157 Rodos
L 161 I. Grigoropoulos
L 162 I. Tournas
L 163 I. Daniolos
L 164 I. Roussen
L 165 I. Krystalidis
L 171 Kriti
L 172 Lesbos
L 185 Kithera
L 189 Milos

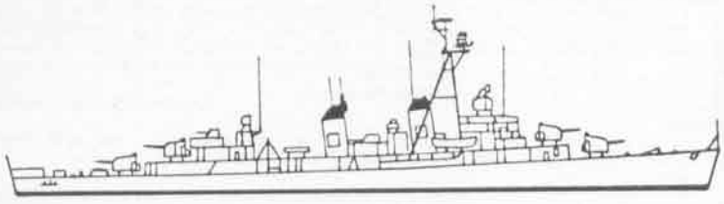
Service Forces

A 74 Aris
A 307 Thetis
A 373 Kronos
A 377 Arethousa
A 407 Antaios
A 409 Acchileus
A 410 Atromitos
A 411 Adamastos
A 412 Aias
A 414 Ariadni
A 415 Evros
A 416 Ouranos
A 417 Hyperion
A 418 Romaleus
A 419 Pandora
A 420 Pandrosos
A 421 Minotauros
A 423 Heraklis
A 424 Iason
A 425 Odisseus
A 426 Kiklops
A 428 Atlas
A 431 Titan
A 432 Gigas
A 433 Kerkini
A 434 Prespa
A 467 Volvi
A 468 Kalliroe
A 470 Kastoria
A 471 Vivies
A 474 Iliki
A 475 Doris
A 476 Arhikelefstis Maliopoulos
A 478 Naftilos
A 479 Karavoyiannos Theophilopoulos
A 481 St. Likoudis

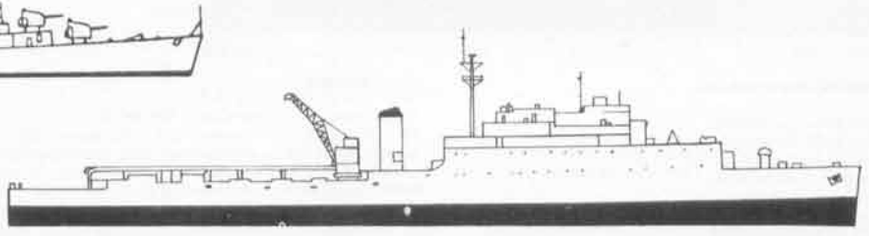
"GEARING (FRAM II)" Class



"CANNON" Class



"FLETCHER" Class (4 Guns)



NAFKRATOUSSA

SUBMARINES

8 TYPE 209 "GLAVKOS" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
GLAVKOS	S 110	Howaldtswerke, Kiel	—	Sep 1970	5 Nov 1971
NEREUS	S 111	Howaldtswerke, Kiel	—	Sep 1971	10 Feb 1972
TRITON	S 112	Howaldtswerke, Kiel	—	1971	23 Nov 1972
PROTEUS	S 113	Howaldtswerke, Kiel	—	Dec 1971	8 Aug 1972
POSYDON	S 116	Howaldtswerke, Kiel	15 Apr 1976	21 Mar 1978	21 Mar 1979
AMPHITRITE	S 117	Howaldtswerke, Kiel	16 Sep 1978	14 June 1978	3 July 1979
OKEANOS	S 118	Howaldtswerke, Kiel	—	16 Nov 1978	15 Nov 1979
PONTOS	S 119	Howaldtswerke, Kiel	—	21 Mar 1979	1 May 1980

Displacement, tons: 1 100 surfaced; 1 210 dived (1 285, second four)
Dimensions, feet (metres): 178·4 × 20·3 × 17·9 *(54·4 × 6·2 × 5·5)* (second four 183·4 ft—*55·9 m*)
Torpedo tubes: 8—21 in (with reloads) bow
Main machinery: Diesel-electric; 4 MTU diesels; 4 Siemens generators; 7 040 kW; 1 Siemens electric motor; 3 700 kW; 1 shaft
Speed, knots: 11 surfaced; 23 dived
Endurance: 50 days
Complement: 31 (6 officers, 25 ratings)

Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal Essen all acting as a consortium. Second four ordered 1975-76.
A single-hull design with two ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. The single screw is slow revving. Very high capacity batteries with GRP lead-acid cells and battery cooling—by Wilh. Hagen and VARTA. Active and passive sonar, sonar detection equipment, sound ranging and underwater telephone. Fitted with two periscopes, radar and Omega receiver.

POSYDON

9/1979, D. A. Hazon

1 Ex-US "GUPPY III" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KATSONIS (ex-USS *Remora*, SS 487)	S 115	Portsmouth Navy Yard	5 Mar 1945	12 July 1945	3 Jan 1946

Displacement, tons: 1 975 standard; 2 450 dived
Dimensions, feet (metres): 326·5 × 27 × 17 *(99·4 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in; 6 bow, 4 stern
Main machinery: 4 diesels; 6 400 hp; 2 electric motors; 5 400 shp; 2 shafts
Speed, knots: 20 surfaced; 15 dived
Range, miles: 12 000 at 10 knots (surfaced)
Complement: 85

Originally of the wartime "Tench" class, subsequently converted under the "Guppy II" programme and, in 1961-62 to "Guppy III". Amongst other modifications this involved the fitting of BQG-4 Sonar (PUFFS) for dived fire control, in addition to the BQR-2 array sonar. Transferred 29 October 1973 by sale.

KATSONIS

1979, D. Dervissis

1 Ex-US "GUPPY IIA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
PAPANIKOLIS (ex-USS *Hardhead*, SS 365)	S 114	Manitowoc S.B. Co	7 July 1943	12 Dec 1943	Apr 1944

Displacement, tons: 1 840 standard; 2 445 dived
Dimensions, feet (metres): 306 × 27 × 17 *(93·2 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in; 6 bow, 4 stern
Main machinery: 3 diesels; 4 800 shp;
2 motors, 5 400 shp; 2 shafts
Speed, knots: 17 surfaced; 15 dived
Range, miles: 12 000 at 10 knots (surfaced)
Complement: 84

Transferred 26 July 1972 by sale.

PAPANIKOLIS *1979, D. Dervissis*

DESTROYERS

1 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MIAOULIS (ex-USS *Ingraham*, DD 694)	D 211	Federal S.B. & D.D. Co	4 Aug 1943	16 Jan 1944	10 Mar 1944

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19
(114·8 × 12·4 × 5·8)
Aircraft: 1 Alouette III helicopter
Guns: 6—5 in *(127 mm)*/38 (twins Mk 38)
A/S weapons: 6—Mk 32 torpedo tubes (triple);
2 ahead throwing Hedgehogs
Main engines: 2 geared turbines; 2 shafts; 60 000 shp
Boilers: 4
Speed, knots: 34
Range, miles: 4 600 at 15 knots
Complement: 269 (16 officers, 94 POs, 159 men)

Former fleet destroyer of the "Allen M. Sumner" class which had been modernised under the FRAM II programme. Transferred by USA July 1971.

Fire control: Mk 37 director.

Radar: SPS 10; SPS 40.

Sonar: SQS 29 (hull); SQA 10 (VDS).

MIAOULIS *1979, D. Dervissis*

1 Ex-US "GEARING (FRAM II)" and 5 Ex-US "GEARING (FRAM I)" CLASSES

Name	No.	Builders	Laid down	Launched	Commissioned
THEMISTOCLES (ex-USS *Frank Knox*, DD 742)	D 210	Bath Iron Works	8 May 1944	17 Sep 1944	11 Dec 1944
KANARIS (ex-USS *Stickell*, DD 888)	D 212	Consolidated Steel Corporation	5 Jan 1945	16 June 1945	26 Sep 1945
KOUNTOURIOTIS (ex-USS *Rupertus*, DD 851)	D 213	Bethlehem (Quincy)	2 May 1945	21 Sep 1945	8 Mar 1946
SACHTOURIS (ex-USS *Arnold J. Isbell*, DD 869)	D 214	Bethlehem (Staten Island)	14 Mar 1945	6 Aug 1945	5 Jan 1946
TOMPAZIS (ex-USS *Gurke*, DD 783)	D 215	Todd Pacific Shipyards	Oct 1944	15 Feb 1945	12 May 1945
APOSTOLIS (ex-USS *Charles P. Cecil* DD 835)	D 216	Bath Iron Works	2 Dec 1944	22 Apr 1945	29 June 1945

Displacement, tons: 2 425 standard; 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19
(119 × 12·6 × 5·8)
Aircraft: 1 Alouette III helicopter *(Themistocles)*
Guns: 6—5 in (127 mm)/38 (twins Mk 38) (210);
4—5 in (127 mm)/38 (twins Mk 38) (remainder);
1—76 mm OTO Melara Compact (aft) (except *Themistocles*);
1—40 mm (fwd)
A/S weapons: 2 fixed Hedgehogs, *(Themistocles)*;
1 ASROC 8-barrelled launcher in remainder;
6 Mk 32 torpedo tubes (triple)
Main engines: 2 Westinghouse geared turbines; 2 shafts;
60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 32·5
Range, miles: 4 800 at 15 knots
Complement: 269 (16 officers, 253 men)

Themistocles was a FRAM II Radar Picket conversion, remainder are FRAM I DD conversions. USS *Myles C. Fox* transferred for spares in August 1980.

Alterations: The 76 mm Compact is now mounted on the helicopter deck so it is unlikely that helo-operations are now possible except in *Themistocles*.

Fire control: Mk 37 director with Mk 25 or 28 radar.
NA 10 with Orion.

Radar: Search: SPS 10.
Fire control: SPS 37 or 40.

Sonar: SQS 23.

Transfers: From USA: *Sachtouris*, 4 Dec 1973 (sold 11 July 1978); *Kanaris*, 1 July 1972; *Kountouriotis*, 10 July 1973 (sold 11 July 1978); *Themistocles* 30 Jan 1971; *Tompazis* by sale 17 Mar 1977, commissioned 20 Mar 1977; *Apostolis* and ex-USS *Myles C. Fox* 2 August 1980.

THEMISTOCLES (FRAM II) *1980, D. Dervissis*

KOUNTOURIOTIS *1979, Hellenic Navy*

8 Ex-US "FLETCHER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ASPIS (ex-USS *Conner*, DD 582)	D 06	Boston Navy Yard	16 Apr 1942	18 July 1942	8 June 1943
VELOS (ex-USS *Charette*, DD 581)	D 16	Boston Navy Yard	20 Feb 1941	3 June 1942	18 May 1943
THYELLA (ex-USS *Bradford*, DD 545)	D 28	Bethlehem (S. Pedro)	28 Apr 1942	12 Dec 1942	12 June 1943
LONCHI ((ex-USS *Hall*, DD 583)	D 56	Boston Navy Yard	16 Apr 1942	18 July 1942	6 July 1943
NAVARINON (ex-USS *Brown*, DD 546)	D 63	Bethlehem (S. Pedro)	27 June 1942	22 Feb 1943	10 July 1943
SFENDONI (ex-USS *Aulick*, DD 569)	D 85	Consolidated Steel Corporation, Texas	14 May 1941	2 Mar 1942	27 Oct 1942
— (ex-FGS *Z 3*, ex-USS *Wadsworth* DD 516)	D —	Bath Iron Works	12 Aug 1942	10 Jan 1943	16 Mar 1943
— (ex-FGS *Z 4*, ex-USS *Claxton* DD 571)	D —	Consolidated Steel Corporation, Texas	25 June 1941	1 Apr 1942	8 Dec 1942

Displacement, tons: 2 050 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18 *(114·7 × 12 × 5·5)*
Guns: 4—5 in *(127 mm)*/38 in *Aspis, Lonchi, Sfendoni* and *Velos*, 5—5 in *Navarinon* and *Thyella*
6—3 in *(76 mm)*/55 (twin Mk 33), in *Aspis, Lonchi, Sfendoni* and *Velos*. 10—40 mm/60 (2 quad, 1 twin) in *Navarinon* and *Thyella*
A/S weapons: Hedgehogs; DCs
Torpedo tubes: 5—21 in *(533 mm)*, (quin), in *Aspis, Lonchi, Sfendoni* and *Velos*, none in *Navarinon* and *Thyella*
Torpedo racks: Side-launching for A/S torpedoes
Main engines: 2 sets GE geared turbines; 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 32
Range, miles: 6 000 at 15 knots; 1 260 at full power
Oil fuel, tons: 506
Complement: 250

LONCHI *1979, Hellenic Navy*

Transferred from USA, *Aspis, Lonchi* and *Velos* at Long Beach, California, on 15 September 1959, 9 February 1960 and 15 June 1959, respectively. *Sfendoni* at Philadelphia on 21 August 1959, *Navarinon* and *Thyella* at Seattle, Washington, on 27 September 1962. All purchased 25 April 1977.
Ex-FGS *Z 1* (ex-US DD 515) acquired for spares in 1979 after use as a target by the Federal German Navy, *Z 3* transferred 16 October 1980 and *Z 4* in 1981.

Electronics: Reported that whole class has received extensive electronic modernisation.

Fire control: Single Mk 37 director with Mk 25 radar for 5-in guns. Two Mk 63 directors and one Mk 56 director with Mk 35 radar for 3-in guns. Mk 51 directors for 40 mm guns.

Radar: Search: SPS 6, SPS 10.

Sonar: SQS 39 or 43.

FRIGATES

Note: Depot ship *Aegeon* currently employed on frigate duties.

1 + 1 + (2) NETHERLANDS "KORTENAER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ELLI (ex-*Pieter Florisz*)	F 450	Netherlands	1 July 1977	15 Dec 1979	1981

Displacement, tons: 3 500 standard; 3 785 full load
Dimensions, feet (metres): 426·5 × 47·9 × 14·7 *(130 × 14·6 × 4·5)*
Aircraft: 1 AB212 ASW helicopter
Missiles: SSM; 8 Harpoon
SAM; NATO Sea Sparrow PDMS
Guns: 2—76 mm/62 Compact
A/S weapons: 4 (twin) Mk 32 torpedo tubes for Mk 46 torpedoes in after deck-house
Main engines: 2 Rolls Royce Olympus TM3B gas turbines = 50 000 shp;
2 Rolls Royce Tyne RM1C gas turbines = 8 000 shp;
2 vp propellers
Speed, knots: 30
Range, miles: 4 700 on Tyne cruising turbines at 16 knots
Complement: 176

"KORTENAER" Class *1/1980, L. and L. van Ginderen*

A contract was signed with the Netherlands on 15 September 1980 for the purchase of one of the "Kortenaer" class currently building for the Netherlands' navy, delivery to be in late 1981. At the same time it was announced that a second of the class would be built in Greece at the Hellenic Shipyards, Skaramanga with at least two more to follow.

Helicopters: Although only one is to be carried under normal conditions there is space for two.

Radar: Surface search: One DA-05.
Fire control: One LW-08; one WM 25 System:
One Stir.
Navigation: One ZW-06.

Sonar: SQS 505 (bow-mounted)

4 Ex-US "CANNON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
AETOS (ex-USS *Slater*, DE 766)	D 01	Tampa S.B. Co	9 Mar 1943	13 Feb 1944	1 May 1944
IERAX (ex-USS *Elbert*, DE 768)	D 31	Tampa S.B. Co	1 Apr 1943	23 May 1944	12 July 1944
LEON (ex-USS *Eldridge*, DE 173)	D 54	Federal S.B. & D.D. Co	22 Feb 1943	25 June 1943	27 Aug 1943
PANTHIR (ex-USS *Garfield Thomas*, DE 193)	D 67	Federal S.B. & D.D. Co	23 Sep 1943	12 Dec 1943	24 Jan 1944

Displacement, tons: 1 240 standard; 1 900 full load
Dimensions, feet (metres): 306 × 36·7 × 14 *(93·3 × 11·2 × 4·3)*
Guns: 3—3 in *(76 mm)*/50 (single Mk 22);
6—40 mm/60 (3 twin Mk 1);
14—20 mm/70 (twins)
A/S weapons: 2 Mk 32 torpedo tubes; Hedgehog; 8 DCTs; 1 DC rack
Main engines: 4 sets General Motors diesel-electric; 6 000 bhp; 2 shafts
Speed, knots: 19·25
Oil fuel, tons: 316
Range, miles: 9 000 at 12 knots
Complement: 220

IERAX *7/1980, Michael D. J. Lennon*

Aetos and *Ierax* were transferred on 15 March 1951 and *Leon* and *Panthir* on 15 January 1951. Their three 21-in torpedo tubes in a triple mount were removed.

Fire control: Mk 51 FCD with Mk 29 radar (Mk 52 FCS).

LIGHT FORCES

10 "LA COMBATTANTE III" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
ANTIPLOIARHOS LASKOS	P 20	Construction M. de Normandie	20 Apr 1977
PLOTARHIS BLESSAS	P 21	Construction M. de Normandie	7 July 1977
IPOPLOIARHOS MIKONIOS	P 22	Construction M. de Normandie	10 Feb 1978
IPOPLOIARHOS TROUPAKIS	P 23	Construction M. de Normandie	8 Nov 1977
SIMEOFOROS KAVALOUDIS	P 24	Hellenic Shipyards, Skaramanga	14 July 1980
ANTIPOPLOIARHOS KOSTAKOS	P 25	Hellenic Shipyards, Skaramanga	9 Sep 1980
IPOPLOIARHOS DEYIANNIS	P 26	Hellenic Shipyards, Skaramanga	Dec 1980
SIMEOFOROS ZENOS	P 27	Hellenic Shipyards, Skaramanga	Mar 1981
SIMEOFOROS SIMITZOPOULOS	P 28	Hellenic Shipyards, Skaramanga	June 1981
SIMEOFOROS STARAKIS	P 29	Hellenic Shipyards, Skaramanga	Sep 1981

Displacement, tons: 359 standard; 425 full load (first four);
329 standard; 429 full load (second group)
Dimensions, feet (metres): 184 × 26·2 × 7 *(56·2 × 8 × 2·1)*
Missiles: SSM; 4 Exocet (single cells) (first four); SSM; 6 Penguin II (second group)
Guns: 2—76 mm/62 (single Compact); 4—30 mm Emerlec (twins)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 4 MTU MD20V-538-TB-91 diesels; 18 000 bhp; 4 shafts = 35·7 knots
Range, miles: 700 at 32·6 knots; 2 000 at 15 knots
Complement: 42 (5 officers, 37 ratings)

First four ordered in September 1974. *A. Laskos* laid down 28 June 1975, launched 6 July 1976; *P. Blessas* laid down 28 October 1975, launched 10 November 1976; *I. Troupakis* laid down 27 January 1976, launched 25 January 1977; *I. Mikonios* laid down 7 April 1976, launched 5 May 1977. Second group of six ordered 1978, first pair laid down mid-1978. *S. Kavaloudis* launched 10 November 1979, *A. Kostakos* 1 March 1980, *I. Deyiannis* 14 July 1980 and *S. Zenos* 8 September 1980.

Electronics: Thomson-CSF Vega II system.

Fire control: 2 CSEE Panda optical directors.

Radar: Surveillance and navigation: One Triton.
Fire control: I band.

IPOPLOIARHOS MIKONIOS *1980, D. Dervissis*

4 "LA COMBATTANTE II" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
ANTHIPOPLOIARHOS ANNINOS (ex-*Navsithoi*)	P 14	C. M. de Normandie, Cherbourg	June 1972
IPOPLOIARHOS ARLIOTIS (ex-*Evniki*)	P 15	C. M. de Normandie, Cherbourg	Apr 1972
IPOPLOIARHOS KONIDIS (ex-*Kymothoi*)	P 16	C. M. de Normandie, Cherbourg	July 1972
IPOPLOIARHOS BATSIS (ex-*Calypso*)	P 17	C. M. de Normandie, Cherbourg	Dec 1971

Displacement, tons: 234 standard; 255 full load
Dimensions, feet (metres): 154·2 × 23·3 × 8·2 *(47 × 7·1 × 2·5)*
Missiles: SSM; 4 Exocet (single cells)
Guns: 4—35 mm/90 (twin Oerlikon)
Torpedo tubes: 2 aft for 21 in *(533 mm)* FDR wire-guided torpedoes
Main engines: 4 MTU diesels; 4 shafts; 12 000 bhp = 36·5 knots
Oil fuel, tons: 39
Range, miles: 850 at 25 knots
Complement: 40 (4 officers, and 36 men)

Ordered in 1969. Fitted with Thomson CSF Triton radar and Plessey IFF Mk 10. *I. Arliotis* launched 26 April 1971, *I. Anninos* launched 8 September 1971, *I. Batsis* launched 26 January 1971, *I. Konidis* launched 20 December 1971.

Radar: Surveillance and navigation: Thomson Triton.
Fire control: Thomson Pollux.

ANTHIPOPLOIARHOS ANNINOS *1980, D. Dervissis*

2 FAST ATTACK CRAFT (PATROL)

Name	No.	Builders	Commissioned
KELEFSTIS STAMOU	P —	Ch. N. de l'Esterel	28 July 1975
DIOPOS ANTONIOU	P —	Ch. N. de l'Esterel	4 Dec 1975

Displacement, tons: 80
Dimensions, feet (metres): 105 × 19 × 5·3 *(32 × 5·8 × 1·6)*
Guns: 1—40 mm Bofors; 1—20 mm
Main engines: 2 MTU 12V 331 TC81 diesels; 2 720 hp = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 17

Wooden hulls. Originally ordered for Cyprus; later transferred to Greece.

KELEFSTIS STAMOU (old number) *1976, Chantiers Navals de l'Esterel*

5 "NASTY" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
ANDROMEDA	P —	Mandal, Norway	Feb 1967
KASTOR	P —	Mandal, Norway	1967
KYKNOS	P —	Mandal, Norway	1967
PIGASSOS	P —	Mandal, Norway	1967
TOXOTIS	P —	Mandal, Norway	1967

Displacement, tons: 69 standard; 76 full load
Dimensions, feet (metres): 80·4 × 24·6 × 6·9 *(24·5 × 7·5 × 2·1)*
Torpedo tubes: 4—21 in
Guns: 2—40 mm
Main engines: 2 Napier Deltic T 18-37 K diesels; 3 100 bhp = 43 knots
Complement: 22

Andromeda and *Iniohos* (deleted 1972) were taken over in February 1967 from Mandal, Norway. *Kastor* and *Kyknos*, and the third pair, *Pigassos* and *Toxotis*, were delivered in succession in 1967.

ANDROMEDA (old number) *1974, Hellenic Navy*

7 Ex-FDR "JAGUAR" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
HESPEROS (ex-*Seeadler* P 6068)	P 50	FDR	1958
KATAIGIS (ex-*Falke* P 6072)	P 51	FDR	1958
KENTAUROS (ex-*Habicht* P 6075)	P 52	FDR	1958
KYKLON (ex-*Greif* P 6071)	P 53	FDR	1958
LELAPS (ex-*Kondor* P 6070)	P 54	FDR	1958
SKORPIOS (ex-*Kormoran* P 6077)	P 55	FDR	1958
TYFON (ex-*Geier* P 6073)	P 56	FDR	1958

Displacement, tons: 160 standard; 190 full load
Dimensions, feet (metres): 139·4 × 23·4 × 7·9 *(42·5 × 7·2 × 2·4)*
Guns: 2—40 mm Bofors L70 (single)
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 4 diesels; 4 shafts; 12 000 bhp—42 knots
Complement: 39

Transferred 1976-77. *Kataigis, Kyklon, Tyfon* commissioned in Hellenic Navy 12 December 1976. *Hesperos* and *Lelaps* on 24 March 1977 and *Kentauros* and *Skorpios* on 22 May 1977. Three others (ex-*Albatros*, ex-*Bussard* and ex-*Sperber*) transferred at same time for spares. Built by Lürssen Vegesack or Kroger Rendsburg.

KENTAUROS *1980, D. Dervissis*

3 COASTAL PATROL CRAFT

DILOS P 267 **KNOSSOS** P 268 **LINDOS** P 269

Displacement, tons: 74·5 standard; 86 full load
Dimensions, feet (metres): 95·1 × 16·2 × 5·6 *(29 × 5 × 1·7)*
Guns: 2—20 mm (single)
Main engines: 2 MTU 12V-331-TO-81 diesels; 2 shafts; 2 720 hp = 27 knots
Complement: 15

Ordered from Hellenic Shipyards, Skaramanga in May 1976 to a design by Abeking and Rasmussen. The navy uses these craft for air-sea rescue duties. Based at the Air Force SAR centre.

KNOSSOS *1979, D. Dervissis*

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
N. I. GOULANDRIS 1	P —	Syros Shipyard	25 June 1975
N. I. GOULANDRIS 2	P 290	Syros Shipyard	6 June 1977

Displacement, tons: 40
Dimensions, feet (metres): 78·7 × 20·3 × 3·4 *(24 × 6·2 × 1·1)*
Gun: 1—20 mm
Main engines: 2 diesels; 2 700 hp = 30 knots
Range, miles: 1 600 at cruising speed

The first of these craft was donated to the Hellenic Navy by the wealthy shipowner after whom she is named. She is lead craft of a number of the same general type, most of them donated by Greek shipowners. P 290 launched and commissioned on 6 June 1977.

3 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
E. PANAGOPOULOS 1	P 61	Hellenic SY, Skaramanga	23 June 1976
E. PANAGOPOULOS 2	—	Hellenic SY, Skaramanga	1980
E. PANAGOPOULOS 3	—	Hellenic SY, Skaramanga	1981

Of somewhat different characteristics to the class above.

E. PANAGOPOULOS 1 *1979, D. Dervissis*

1 Ex-FDR "KW" CLASS

ARHIKELEFSTIS STASSIS (ex-KW 2) P 288

Displacement, tons: 80
Dimensions, feet (metres): 94·8 × 15·4 × 4·6 *(28·9 × 4·7 × 1·4)*
Gun: 1—20 mm
Speed, knots: 8

Transferred 1976. Sister craft *A. Maliopoulos* serving as survey craft. P 288 patrols in the Salamis area, her speed having been drastically reduced.

AMPHIBIOUS FORCES

1 Ex-US "CABILDO" CLASS (LSD)

Name	*No.*	*Builders*	*Commissioned*
NAFKRATOUSSA (ex-USS *Fort Mandan*, LSD 21)	L 153	Boston Navy Yard	31 Oct 1945

Displacement, tons: 4 790 light; 9 357 full load
Dimensions, feet (metres): 457·8 × 72·2 × 18 *(139·6 × 22 × 5·5)*
Guns: 8—40 mm
Main engines: Geared turbines; 2 shafts; 7 000 shp = 15·4 knots
Boilers: 2

Laid down on 2 January 1945. Launched on 22 May 1945. Taken over from USA in 1971 replacing the previous *Nafkratoussa* (ex-*Hyperion*, ex-LSD 9) out of service in 1971 as Headquarters' Ship of Captain, Landing Forces.

NAFKRATOUSSA *1973, Hellenic Navy*

2 Ex-US "TERREBONNE PARISH" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
INOUSE (ex-USS *Terrell County*, LST 1157)	L 104	Bath Iron Works Corporation	19 Mar 1953
KOS (ex-USS *Whitfield County*, LST 1169)	L 116	Christy Corporation	14 Sep 1954

Displacement, tons: 2 590 light; 5 800 full load
Dimensions, feet (metres): 384 × 55 × 17 *(117·1 × 16·7 × 5·2)*
Guns: 6—3 in/50
Main engines: 4 General Motors diesels; 6 000 bhp; 2 shafts (cp propellers) = 15 knots
Complement: 115
Troops: 395

Part of class of 16. Transferred 17 March 1977 by sale. Towed to Greece for reactivation and modernisation.

INOUSE *1978, Michael D. J. Lennon*

5 Ex-US "511—1152" and "1—510" CLASSES (LSTs)

511—1152 Series

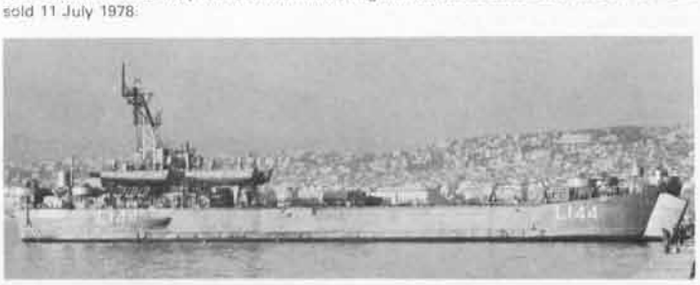
IKARIA (ex-USS *Potter County*, LST 1086) L 154
KRITI (ex-USS *Page County*, LST 1076) L 171

1—510 Series

SYROS (ex-USS *LST 325*) L 144
RODOS (ex-USS *Bowman County*, LST 391) L 157
LESBOS (ex-USS *Boone County*, LST 389) L 172

Displacement, tons: 1 653 standard; 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 2·9)*
Guns: 8—40 mm; 6—20 mm (*Rodos* 10—40 mm)
Main engines: 2 General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Range, miles: 9 500 at 9 knots
Complement: 93 (8 officers, 85 men)

Former US tank landing ships. Cargo capacity 2 100 tons. *Ikaria*, *Lesbos* and *Rodos* were transferred to the Hellenic Navy in August 1960, June 1960 and May 1960 respectively. *Syros* was transferred on 29 May 1964 at Portsmouth, Virginia. *Kriti* was transferred in March 1971 and sold 11 July 1978.



SYROS *1979, D. Dervissis*

2 Ex-BRITISH LCTs

Name	*No.*	*Builders*	*Commissioned*
KITHERA (ex-*LCT 1198*)	L 185	UK	1945
MILOS (ex-*LCT 1300*)	L 189	UK	1945

Displacement, tons: 400 full load
Guns: 2—20 mm
Speed, knots: 7

The survivors of a class of twelve acquired in 1946.

5 Ex-US "LSM 1" CLASS

IPOPLOIARHOS GRIGOROPOULOS (ex-USS *LSM 45*) L 161
IPOPLOIARHOS TOURNAS (ex-USS *LSM 102*) L 162
IPOPLOIARHOS DANIOLOS (ex-USS *LSM 227*) L 163
IPOPLOIARHOS ROUSSEN (ex-USS *LSM 399*) L 164
IPOPLOIARHOS KRYSTALIDIS (ex-USS *LSM 541*) L 165

Displacement, tons: 743 beaching; 1 095 full load
Dimensions, feet (metres): 203·5 × 34·2 × 8·3 *(62·1 × 10·4 × 2·5)*
Guns: 2—40 mm; 8—20 mm
Main engines: Diesel direct drive; 2 shafts; 3 600 bhp = 13 knots

LSM 541 was handed over to Greece at Salamis on 30 October 1958 and *LSM 45, LSM 102, LSM 227* and *LSM 399* at Portsmouth, Virginia on 3 November 1958. All were renamed after naval heroes killed during World War II.

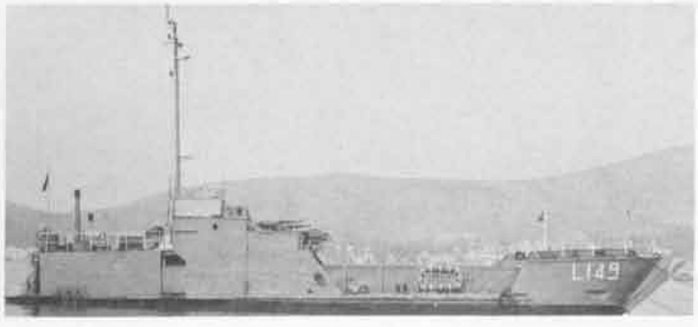
IPOPLOIARHOS KRYSTALIDIS *1979, D. Dervissis*

8 Ex-US "LCU 501" CLASS (Ex-LCT 6)

Name	*No.*	*Builders*	*Commissioned*
KASSOS (ex-*LCU 1382*)	L 145	Mare Island Naval Yard	30 Nov 1944
KARPATHOS (ex-*LCU 1379*)	L 146	Mare Island Naval Yard	17 Nov 1944
KIMOLOS (ex-*LCU 971*)	L 147	Mare Island Naval Yard	1 Feb 1944
KEA (ex-*LCU 1229*)	L 148	USA	1944
KITHNOS (ex-*LCU 763*)	L 149	Missouri Valley Bridge and Iron Co	24 Dec 1944
SIFNOS (ex-*LCU 677*)	L 150	Pidgeon-Thomas Iron Co	11 Mar 1944
SKOPELOS (ex-*LCU 852*)	L 151	USA	1944
SKIATHOS (ex-*LCU 827*)	L 152	Kansas City Steel	10 Apr 1944

Displacement, tons: 143 standard; 309 full load
Dimensions, feet (metres): 119 × 32·7 × 5 *(36·3 × 10 × 1·5)*
Guns: 2—20 mm
Main engines: Diesels; 3 shafts; 440 bhp = 8 knots
Complement: 13

Former US Utility Landing Craft of the LCU (ex-LCT 6) type. *Skiathos* and *Skopelos* acquired in 1959. *Kithnos, Kea* and *Sifnos* were transferred from the USA in 1961, and remainder in 1962.



KITHNOS *1971, Hellenic Navy*

13 Ex-US LCMs

Transferred from the USA.

34 Ex-US LCVPs

Transferred from the USA.

14 LCPs

Ordered from Greek shipyards in 1977.

MINE WARFARE FORCES

2 COASTAL MINELAYERS

Name	*No.*	*Builders*	*Commissioned*
AKTION (ex-*LSM 301*, ex-*MMC 6*)	N 04	Charleston Naval Shipyard	1 Jan 1945
AMVRAKIA (ex-*LSM 303*, ex-*MMC 7*)	N 05	Charleston Naval Shipyard	6 Jan 1945

Displacement, tons: 720 standard; 1 100 full load
Dimensions, feet (metres): 203·5 × 34·5 × 8·3 *(62·1 × 10·5 × 2·5)*
Guns: 8—40 mm (4 twin); 6—20 mm (single)
Mines: Capacity 100 to 130
Main engines: 2 diesels; 2 shafts; 3 600 bhp = 12·5 knots
Range, miles: 3 000 at 12 knots
Complement: 65

Former US "LSM 1" class. *Aktion* was launched on 1 January 1945 and *Amvrakia* on 14 November 1944. Converted in the USA into minelayers for the Hellenic Navy. Underwent extensive rebuilding from the deck up. Twin rudders. Transferred on 1 December 1953.

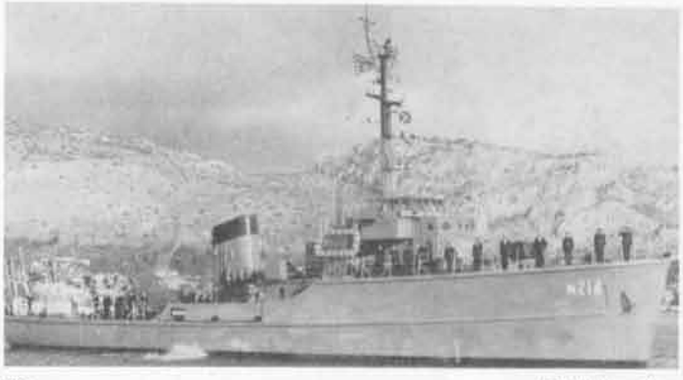
AMVRAKIA *1974, Hellenic Navy*

9 US "MSC 294" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
ALKYON (ex-*MSC 319*)	M 211	Peterson Builders	3 Dec 1968
KLIO (ex-*Argo*), (ex-*MSC 317*)	M 213	Peterson Builders	7 Aug 1968
AVRA (ex-*MSC 318*)	M 214	Peterson Builders	3 Oct 1968
PLEIAS (ex-*MSC 314*)	M 240	Peterson Builders	22 June 1967
KICHLI (ex-*MSC 308*)	M 241	Peterson Builders	14 July 1964
KISSA (ex-*MSC 309*)	M 242	Peterson Builders	1 Sep 1964
AIGLI (ex-*MSC 299*)	M 246	Tacoma, California	4 Jan 1965
DAFNI (ex-*MSC 307*)	M 247	Peterson Builders	23 Sep 1964
AEDON (ex-*MSC 310*)	M 248	Peterson Builders	13 Oct 1964

Displacement, tons: 320 standard; 370 full load
Dimensions, feet (metres): 144 × 28 × 8·2 *(43·3 × 8·5 × 2·5)*
Guns: 2—20 mm (twin)
Main engines: 2 General Motors diesels; 2 shafts; 880 bhp = 13 knots
Complement: 39

Built in the USA for Greece. Wooden hulls.



AVRA *1974, Hellenic Navy*

5 Ex-US "ADJUTANT" CLASS (MINESWEEPERS—COASTAL)

ATALANTI (ex-Belgian *St. Truiden*, M 919, ex-USS *MSC 169*) M 202
ANTIOPI (ex-Belgian *Herve*, M 921, ex-USS *MSC 153*) M 205
FAEDRA (ex-Belgian *Malmedy*, M 922, ex-USS *MSC 154*) M 206
THALIA (ex-Belgian *Blankenberge*, M 923, ex-USS *MSC 170*) M 210
NIOVI (ex-Belgian *Laroche*, M 924, ex-USS *MSC 171*) M 254

Displacement, tons: 330 standard; 402 full load
Dimensions, feet (metres): 145 × 27·9 × 8 *(44·2 × 8·5 × 2·4)*
Guns: 2—20 mm Oerlikon (1 twin)
Main engines: 2 General Motors diesels; 2 shafts; 900 bhp = 14 knots
Complement: 38

Originally supplied to Belgium under MDAP. All built in 1954 in the USA—M 202, 210 and 254 by Consolidated S.B. Corp, Morris Heights and the other pair by Hodgson Bros, Goudy and Stevens, East Booth Bay. Subsequently returned to the USA and simultaneously transferred to Greece as follows: 29 July 1969 *(Herve* and *St. Truiden)* and 26 September 1969 *(Laroche, Malmedy* and *Blankenberge)*.

ANTIOPI *1973, Dr. Giorgio Arra*

SURVEY AND RESEARCH VESSELS

Name	No.	Builders	Commissioned
NAFTILOS	A 478	Annastadiades Tsortanides (Perama)	3 Apr 1976

Displacement, tons: 1 400
Dimensions, feet (metres): 207 × 38 × 13·3 *(63·1 × 11·6 × 4·2)*
Main engine: 1 Babcock & Wilcox diesel; 2 640 hp = 15 knots
Complement: 74 (8 officers, 66 men)

Launched 19 November 1975. Trials February 1976.

NAFTILOS *1979, D. Dervissis*

1 NEW CONSTRUCTION

An order was placed in 1979 for a 164 ft *(50 m)* survey ship to be built in a Greek shipyard.

DORIS A 475 (ex-A 245)

Transferred from minesweeping duties. Details as for "MSC 294" class. Built by Tacoma, USA and commissioned on 9 November 1964. Complement three officers and 32 men.

ARHIKELEFSTIS MALIOPOULOS A 476

Of West German "KW" class transferred in 1976. Details at end of Light Forces section.

SERVICE FORCES

1 TRAINING SHIP

Name	No.	Builders	Commissioned
ARIS	A 74	Salamis	1980

Displacement, tons: 2 400 standard; 2 630 full load
Dimensions, feet (metres): 328 × 48·2 × 14·8 *(100 × 14·7 × 4·5)*
Guns: 1—3 in *(76mm)*; 2—40 mm/70; 4—20 mm
Main engines: 2 MAK diesels; 2 shafts; 10 000 hp = 19 knots
Complement: 500 (370 cadets)

Laid down October 1976 at Salamis. Launched 4 October 1978. Fitted with helicopter facilities. Could be used as transport or hospital ship.

ARIS *1980*

1 Ex-FDR DEPOT SHIP

Name	No.	Builders	Commissioned
AEGEON (ex-*Weser* A 62)	D 03	Elsflether Werft	1960

Displacement, tons: 2 370
Dimensions, feet (metres): 323·5 × 38·8 × 11·2 *(99 × 11·8 × 3·4)*
Guns: 2—3·9 in *(100 mm)* (singles); 4—40 mm (singles)
Main engines: 6 diesels; 12 000 hp
Speed, knots: 20·5
Range, miles: 1 625 at 15 knots (economical)
Complement: 110

Transferred July 1975. Currently employed on frigate duties and as FAC support ship.

AEGEON *1979, Hellenic Navy*

2 Ex-US "PATAPSCO" CLASS (SUPPORT TANKERS)

Name	No.	Builders	Commissioned
ARETHOUSA (ex-USS *Natchaug*, AOG 54)	A 377	Cargill Inc, Savage, Minn.	11 June 1945
ARIADNI (ex-USS *Tombigbee*, AOG 11)	A 414	Cargill Inc, Savage, Minn.	12 July 1944

Displacement, tons: 1 850 light; 4 335 full load
Measurement, tons: 2 575 deadweight; cargo capacity 2 040
Dimensions, feet (metres): 292 wl; 310·8 oa × 48·5 × 15·7 *(89·1; 93·2 × 14·8 × 4·8)*
Guns: 4—3 in; 50 cal
Main engines: General Motors diesels; 2 shafts; 3 300 bhp = 14 knots
Complement: 43 (6 officers, 37 men)

Former US petrol carriers. *Arethousa* laid down on 15 August 1944. Launched on 16 December 1944. Transferred from the USA to Greece under the Mutual Defense Assistance Program in July 1959 and *Ariadni* transferred 7 July 1972 (sold 11 July 1978), both at Pearl Harbor.

ARIADNI *1980, D. Dervissis*

1 AMMUNITION SHIP

Name	No.	Builders	Commissioned
EVROS (ex-FDR *Schwarzwald* A1400, ex-*Amalfi*:*ee*)	A 415	Ch. Dubigeon Nantes	1957

Measurement, tons: 1 667 gross
Dimensions, feet (metres): 263·1 × 39 × 15·1 *(80·2 × 11·9 × 4·6)*
Guns: 4—40 mm Bofors
Main engines: Sulzer diesel; 3 000 bhp = 15 knots

Bought by FDR from Société Navale Caënnaise in February 1960. Transferred to Greece 6 June 1976.

EVROS *6/1976, Gerhard Koop*

2 HARBOUR TANKERS

Name	No.	Builders	Commissioned
OURANOS	A 416	Kinosoura Shipyard	27 Jan 1977
HYPERION	A 417	Kinosoura Shipyard	27 Apr 1977

Displacement, tons: 1 200
Dimensions, feet (metres): 222·1 × 32·8 × 15·4 *(67·7 × 10 × 4·7)*
Main engine: 1 diesel; 1 750 hp = 12 knots

Order announced 24 June 1976.

1 HARBOUR TANKER

VIVIES A 471

Originally a water carrier. Capacity 187 tons, speed 11 knots.

1 HARBOUR TANKER

KRONOS (ex-*Islay*, ex-*Dresden*) A 373

Displacement, tons: 311
Capacity: 110 tons

Now used as static fuel barge.

MISCELLANEOUS

YACHT

ARGO (ex-HMCS *Stormont*, ex-*Christina*)

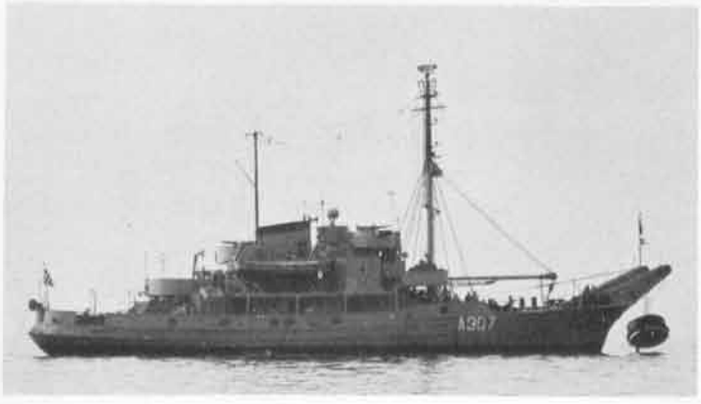
Presented by Miss Christina Onassis and commissioned on 12 July 1978. Originally RCN "River" class frigate of 1 445 tons standard built by Vickers Montreal in 1943. Sold 1947—renamed *Christina* in 1951.

1 NETLAYER

Name	*No.*	*Builders*	*Commissioned*
THETIS (ex-USS *AN 103*)	A 307	Kröger, Rendsburg	Apr 1960

Displacement, tons: 680 standard; 805 full load
Dimensions, feet (metres): 169·5 × 33·5 × 11·8 *(51·7 × 10·2 × 3·6)*
Guns: 1—40 mm; 4—20 mm
Main engines: MAN diesels; 1 shaft; 1 400 bhp = 12 knots
Complement: 48

US offshore order. Launched in 1959.



THETIS *1979, D. Dervissis*

ADAMIDIS (ex-*AVR 1084*) P 286

Of 24 tons commissioned in Hellenic Navy in 1956. In reserve, sisters *Ira* and *Karnavias* being deleted in 1978.

2 AUXILIARY TRANSPORTS

Name	*No.*	*Builders*	*Commissioned*
PANDORA	A 419	Perama Shipyard	26 Oct 1973
PANDROSOS	A 420	Perama Shipyard	1 Dec 1973

Displacement, tons: 390
Dimensions, feet (metres): 153·5 × 27·2 × 6·2 *(46·8 × 8·3 × 1·9)*
Speed, knots: 12

Launched 1972 and 1973. Transport capacity for 500 people.

PANDROSOS *10/1980, D. Dervissis*

2 LIGHTHOUSE TENDERS

Name	*No.*	*Builders*	*Commissioned*
I. KARAVOYIANNOS THEOPHILOPOULOS	A 479	Perama Shipyard	17 Mar 1976
ST. LIKOUDIS	A 481	Perama Shipyard	2 Jan 1976

Displacement, tons: 1 350
Dimensions, feet (metres): 207·3 × 38 × 13·1 *(63·2 × 11·6 × 4)*
Main engine: 1 diesel; 2 400 hp = 15 knots
Complement: 40

Have facilities for small helicopter.

ST. LIKOUDIS *1979, D. Dervissis*

3 TUGS

HERAKLIS A 423
IASON A 424
ODISSEUS A 425

Of 345 tons laid down 1977 at Perama Shipyard. 98·5 × 26 × 11·3 ft with one MWM diesel, 12 knots. Commissioned 6 April, 6 March and 28 June 1978 respectively.

3 TUGS

ANTAIOS (ex-USS *Busy*, YTM 2012) A 407
ACCHILEUS (ex-USS *Confident*) A 409
AIAS (ex-USS *Ankachak*, YTM 767) A 412

Aias transferred on lease 1972 and sold 11 July 1978; *Antaios* and *Acchileus* transferred in 1947.

ATROMITOS A 410 **ADAMASTOS** A 411

Both of 310 tons, 1 260 hp and 12 knots. Commissioned 20 June 1968.

ROMALEUS A 418

Of 600 hp. Commissioned 25 March 1962.

MINOTAUROS (ex-*ST 539*) A 421

Of 650 hp. Commissioned 1962.

KIKLOPS (ex-*F 10*) A 426

Of 200 hp. Commissioned 28 November 1947.

PATRAIKOS A 427

Of 650 hp and 26·7 metres. Built in 1954, given to navy by the port of Patra. Commissioned April 1976. Now in reserve since 31 July 1978.

TITAN A 431

Of 240 hp. Commissioned 1962.

GIGAS A 432

Of 1 200 hp. Commissioned 26 November 1961.

ATLAS (ex-HMS *Mediator*) A 428

Originally commissioned 28 November 1947. Transferred to the Navy 1 August 1979 by Tsavliris and Sons. Commissioned December 1979.

3 HARBOUR TUGS

Built at Perama Shipyard. Commissioned December 1979.

6 + 1 WATER BOATS

KERKINI (ex-FDR FW 3) A 433
PRESPA A 434
VOLVI A 467
KALLIROE A 468
KASTORIA A 470
ILIKI A 474

Capacity: *Iliki* 120 tons, *Volvi* 350 tons, *Kastoria* 520 tons. *Kerkini*, of 350 ton deadweight transferred by FDR 1976. A 433 transferred 22 April 1976, 434 commissioned 10 October 1976 and 468 on 26 October 1972. *Volvi* and *Iliki* used as static water barges since 1979.
One of 650 tons under construction at Perama Shipyard.

Doirani of 450 tons, built in 1976, reported as taken over from another Government Department.

5 FLOATING CRANES

Built in Greece.

1 Ex-CRUISER

AVEROF

No excuse is needed for including this ship, which is now classified as a National Monument and moored at Poros. Laid down by Orlando, Italy in 1907 and armed with four 9·2-in guns she served during World War I in the Dardanelles campaign and in World War II in the Mediterranean and Indian Ocean.

AVEROF *6/1979, I. B. Porteous*

COAST GUARD

(Limenikon Soma = Harbour Corps)

Senior Officers

Commander-in-Chief:
Vice-Admiral I. Hrisanthakopoulos
Deputy Commander-in-Chief:
Rear-Admiral N. Kliosis

Bases

HQ: Piraeus
Main bases: Piraeus, Eleusis, Thessalonika, Volos, Patra, Corfu, Rhodes, Mytilene, Heraklion (Crete), Chios
Minor bases: Every port and island of Greece

Ships and Craft

In general very similar in appearance to naval ships, being painted grey, but pennant numbers are in black. In addition to the Coast Guard vessels about 20 very similar craft are operated by the Customs Service's Anti-Smuggling Flotilla.

Personnel

1981: 4 000 officers and men

General

This force consists of 80 patrol craft and anti-pollution vessels mostly of modern construction and is administered in peace-time by the Ministry of Merchant Marine. In war-time it would be transferred to naval command.
Officers are trained at the Naval Academy and ratings at two special schools.
The Abeking Rasmussen class of four craft (details in main section under Light Forces) are the largest currently in use. The pennant numbers are all preceded as in the accompanying photograph by Greek "Lamda Sigma" for Limenikon Soma.
Three more Abeking and Rasmussen craft are operated by the Customs Service.

Duties

The policing of all Greek harbours, coasts and territorial waters, navigational safety, anti-pollution surveillance and operations, supervision of port authorities, merchant navy training, inspection of Greek merchant ships world-wide.

Coast Guard craft of D 44 "LAMBRO" Class *8/1978, D. Dervissis*

GRENADA

Grenada was granted self-government, in association with the UK (who was responsible for her defence) on 3 March 1967. Independence was achieved in February 1973.

Mercantile Marine

Lloyd's Register of Shipping:
2 vessels of 226 tons gross

1 COASTAL PATROL CRAFT

Displacement, tons: 15
Dimensions, feet (metres): 40 × 12 × 2 *(12·2 × 3·7 × 0·6)*
Guns: 3 MGs
Main engines: 2 diesels; 370 hp = 22 knots

Delivered by Brooke Marine, Lowestoft early in 1972.

GUATEMALA

On 5 January 1959 Guatemala announced the establishment of a Navy for Coast Guard work. Subsequently the Navy was assigned missions of search and rescue and the support of amphibious operations. The commissioning of a Marine Elevator (Synchrolift) at Santo Tomás on 23 June 1973 (230 ton lift) greatly improved this Navy's repair facilities.

Ministerial

Minister of National Defence:
General D. F. Rubio Coronado

Personnel

(a) 1981: 600 (100 officers and 500 men, including 10 officers and 200 men of the Marines)
(b) 2 years' national service

Bases

Santo Tomás de Castillas (Atlantic); Sipacate (Pacific)

Mercantile Marine

Lloyd's Register of Shipping:
6 vessels of 13 626 tons gross

DELETIONS

1979 *Xucuxuy, Camalote* (Coastal Patrol Craft)

LIGHT FORCES

3 "BROADSWORD" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builder*	*Commissioned*
KUKOLKAN	P 1051	Halter Marine	4 Aug 1976
—	P 1052	Halter Marine	22 Oct 1976
—	P 1053	Halter Marine	1977

Displacement, tons: 90·5 standard; 110 full load
Dimensions, feet (metres): 105 × 20·4 × 6·3 *(32 × 6·2 × 1·9)*
Guns: 1—75 mm recoilless (aft); 1—81 mm mortar; 1—12·7 mm (above mortar); 4 MGs (quad)
Main engines: 2 General Motors 16V-149TI diesels; 2 shafts; 3 200 hp = 32 knots
Complement: 20 (5 officers, 15 men)

KUKOLKAN *1978*

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
UTATLAN	P 851	Sewart, Louisiana	May 1967
SUBTENIENTE USORIO SARAVIA	P 852	Sewart, Louisiana	1972

Displacement, tons: 60
Dimensions, feet (metres): 85 × 18·7 × 3 *(25·9 × 5·7 × 0·9)*
Guns: 2 MGs
Main engines: 2 General Motors diesels; 2 200 bhp = 23 knots
Range, miles: 400 at 12 knots
Complement: 12 (2 officers, 10 ratings)

Built to standard Sewart design.

2 Ex-US AVR (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
CABRAKAN	P 631	USA	1945
HUNAHPU	P 632	USA	1945

Displacement, tons: 32
Dimensions, feet (metres): 63·3 × 15·4 × 3 *(19·3 × 4·7 × 0·9)*
Guns: 2 MGs
Main engines: 2 General Motors 8V71 diesels = 25 knots
Complement: 10 (2 officers, 8 men)

Transferred—*Hunahpu*, 1964; *Cabrakan*, 1965.

5 US "CUTLASS" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
TECUNUMAN	P 651	Halter Marine	1972
KAIBILBALAM	P 652	Halter Marine	1972
AZUMANCHE	P 653	Halter Marine	1972
TZACOL	P 654	Halter Marine	10 Mar 1976
BITOL	P 655	Halter Marine	4 Aug 1976

Displacement, tons: 32 full load
Dimensions, feet (metres): 64·5 × 17 × 3 *(19·7 × 5·2 × 0·9)*
Guns: 1—12·7 mm; 3—7·6 mm MGs (triple)
Main engines: 2 General Motors diesels; 2 shafts; 960 hp = 25 knots
Complement: 10 (2 officers, 8 ratings)

BITOL *1978*

3 COASTAL PATROL CRAFT

Ordered from Abeking and Rasmussen, Lemwerder in 1979.

1 Ex-US "LCM 8" TYPE

CHINALTENANGO E 81

Of 115 tons full load. Transferred December 1965.

1 Ex-US "LCU 1466" TYPE

Of 360 tons full load.

1 Ex-US REPAIR BARGE

Ex-US YR 40. Transferred in 1952.

2 "MACHETE" CLASS (TROOP CARRIERS)

Name	*No.*	*Builder*	*Commissioned*
PICUDA	P 361	Halter Marine	4 Aug 1976
BARRACUDA	P 362	Halter Marine	4 Aug 1976

Displacement, tons: 8·3 full load
Dimensions, feet (metres): 36 × 12·5 × 2 *(11 × 3·8 × 0·6)*
Main engines: 2 General Motors 6V 53PI; 2 water jets; 540 hp = 36 knots
Complement: 2 + 20 troops

Armoured, open deck, aluminium craft.

2 Ex-USCG "40 ft" UTILITY BOATS MK IV

TIKAL P 401 **IXINCHE** P 402

Transferred August 1963.

30 WORK BOATS

Under construction in Guatemala.

6 MOTOR LAUNCHES

Procured in late 1960s. Reported as inboard/outboard craft. One at least is of 28 ft and 6·5 tons with one machine gun supplied by Striker Boat Co, Florida, USA.

1 TUG

Note: Three other names listed—*Escuintla, Mazatenango, Retalhuleu*—in addition to two yachts—*Mendieta* and one other.

GUINEA

Personnel

(a) 1981: 600 officers and men
(b) 2 years' conscript service

Bases

Conakry, Kakanda

Mercantile Marine

Lloyd's Register of Shipping:
14 vessels of 5 648 tons gross

LIGHT FORCES

1 Ex-SOVIET "T 58" CLASS (MINESWEEPER—OCEAN)

LAMINE SADJI KABA

Displacement, tons: 790 standard; 900 full load
Dimensions, feet (metres): 229·9 × 29·5 × 7·9 *(70 × 9 × 2·4)*
Guns: 4—57 mm (twins); 4—25 mm (twins)
Main engines: 2 diesels; 2 shafts; 4 000 hp
Speed, knots: 17
Complement: 82

Transferred May 1979.

6 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

P 733 **P 734** **P 735** **P 736** **+2**

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twins); 4—25 mm (twins)
A/S weapons: 8 DCs
Main engines: 4 diesels; 4 shafts; 4 800 hp = 30 knots
Complement: 25

Transferred 1973-74 (first four) and 1976.

3 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm/65 (twins)
Torpedo tubes: 4—21 in *(533 mm)* (singles)
A/S weapons: 2 DC racks
Main engines: 3 diesels; 3 shafts; 12 000 hp = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

Two transferred late 1978 and one, without torpedo tubes, in December 1979.

4 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (twin)
Torpedo tubes: 2—21 in *(533 mm)* (or mines or DCs)
Main engines: 4 diesels; 4 shafts; 4 800 bhp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

It seems unlikely that the torpedo armament is operational. Transferred 1971-72.

Radar: Skin Head.

1 COASTAL PATROL CRAFT

Name	*No.*	*Builder*	*Commissioned*
ALMAMY BOCAR BIRO BARRY	P 400	Chantiers Navals d l'Esterel	Aug 1979

Displacement, tons: 56 full load
Dimensions, feet (metres): 91·8 × 17·1 × 5·2 *(28 × 5·2 × 1·6)*
Gun: 1—20 mm
Main engines: 2 MTU diesels; 2 890 hp = 35 knots
Range, miles: 750 at 15 knots
Complement: 13

ALMAMY BOCAR BIRO BARRY *1979*

3 Ex-SOVIET "POLUCHAT I" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 70 standard; 91 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm (1 twin)
Main engines: 2 diesels; 2 shafts; 2 400 bhp = 20 knots
Oil fuel, tons: 9·25
Range, miles: 460 at 17 knots
Complement: 15 (2 officers, 13 ratings)

Radar: One navigation set.

2 Ex-SOVIET "MO VI" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 50 standard; 66 full load
Dimensions, feet (metres): 83·6 × 19·7 × 4 *(25·5 × 6·1 × 1·2)*
Guns: 4—25 mm (twin)
A/S weapons: DC mortars and racks
Main engines: 4 diesels; 4 shafts; 4 800 hp = 38 knots
Complement: 12

Transferred 1972-73.

Radar: Skin Head.

2 SMALL UTILITY TYPE (LANDING CRAFT)

GUINEA-BISSAU

Personnel

(a) 1981: 250 officers and men
(b) Voluntary service

Base

Bissau

Aircraft

Purchase of patrol aircraft for offshore surveillance is projected.

Mercantile Marine

Lloyd's Register of Shipping:
82 vessels of 18 261 tons gross

1 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Details as in Guinea section. Transferred January 1979.

1 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Details as in Guinea section. Reported 1977.

2 Ex-SOVIET "POLUCHAT" CLASS (COASTAL PATROL CRAFT)

Details as in Guinea section. Transferred 1978.

2 COASTAL PATROL CRAFT

CABO ROXO **ILHA DE POILÃO**

Displacement, tons: 30
Dimensions, feet (metres): 62·3 × 17·7 × 3·9 *(19 × 5·4 × 1·2)*
Guns: 2—12·7 mm
Main engines: 2 General Motors diesels; 1 050 hp; 2 shafts = 25 knots
Range, miles: 650 at 25 knots; 1 500 at 9 knots

French Plascoa—1900 type.

3 COASTAL PATROL CRAFT

Displacement, tons: 21·2 full load
Dimensions, feet (metres): 52·2 × 14·4 × 4·3 *(15·9 × 4·4 × 1·3)*
Gun: 1—12·7 mm
Main engines: 2 diesels; 768 hp = 25·7 knots
Range, miles: 430 at 18 knots
Complement: 5

Ordered from Bazán, Ferrol in 1978.

1 Ex-SOVIET "BIYA" CLASS (SURVEY SHIP)

Displacement, tons: 750 standard; 1 000 full load
Dimensions, feet (metres): 229·6 × 32·1 × 11·5 *(70 × 9·8 × 3·5)*
Main engines: 2 diesels = 16 knots

Transferred June 1978.

Several river craft and some small LCU type are reported in service.
Reported that USSR transferred two T-4 landing craft in 1978-79.

GUYANA

Ministerial

Premier and Minister of National Security:
L. F. S. Burnham

Personnel

(a) 1981: Approx 150 members of Guyana Defence Force
(b) Voluntary

Bases

Georgetown, New Amsterdam

Prefix to Ships' Names

GDFS

Mercantile Marine

Lloyd's Register of Shipping:
3 vessels of 757 tons gross

LIGHT FORCES

1 VOSPER THORNYCROFT TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PECCARI	DF 1010	Vosper Thornycroft	26 Jan 1977

Displacement, tons: 96 standard; 109 full load
Dimensions, feet (metres): 103 × 19·8 × 5·5 *(31·4 × 6 × 1·6)*
Guns: 2—20 mm
Main engines: 2—12-cyl Paxman Ventura diesels; 3 500 hp = 27 knots
Range, miles: 1 400 at 14 knots
Complement: 22

Launched 26 March 1976. Trials started 25 November 1976.

PECCARI *1977, Michael D. J. Lennon*

3 VOSPER TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
JAGUAR	—	Vosper	28 Apr 1971
MARGAY	—	Vosper	21 May 1971
OCELOT	—	Vosper	22 June 1971

Displacement, tons: 10
Dimensions, feet (metres): 40 × 12 × 3·5 *(12·2 × 3·7 × 1·1)*
Gun: 1—7·62 mm MG
Main engines: 2 Cummins diesels; 370 hp = 19 knots
Range, miles: 150 at 12 knots
Complement: 6

They have glass fibre hulls with aluminium superstructures.

JAGUAR *1971, C. and S. Taylor*

4 Ex-US "45 ft" CLASS (COASTAL PATROL CRAFT)

CAMOUDIE **LABANA** **RATTLER** +1

2 Ex-SHRIMP BOATS

EKEREKU —

Note: Guyana Harbour Board operates ex-YTM 190 and ex-YFN 960 from USA.

HAITI

Ministerial

Secretary for Interior and National Defence:
Pierre Biamby

Personnel

(a) 1981: Total 300 (40 officers and 260 men)
(b) Voluntary service

Base

Port Au Prince

Mercantile Marine

Lloyd's Register of Shipping:
4 vessels of 1 120 tons gross

DELETIONS

1977 *Jean Jacques Dessalines* ("Cohoes" class) returned to USA. *Admiral Killick, Seize Août 1946, Savannah, Artibonite, Sans Souci,* six 83 ft cutters.

COAST GUARD VESSELS

2 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
HENRI CHRISTOPHE (ex-USS *Samoset* ATA 190)	—	Levingston S.B. Co, Orange, Texas	1 Jan 1945
— (ex-USS *Accokeek* ATA 181)	—	Levingston S.B. Co, Orange, Texas	7 Oct 1944

Displacement, tons: 534 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Guns: 4—20 mm
Main engines: Diesel electric; 1 shaft; 1 500 bhp = 13 knots
Complement: 49

Henri Christophe transferred by sale in August 1978 and second in 1980.

2 Ex-USCG "CAPE" CLASS

Name	*No.*	*Builders*	*Commissioned*
LA CRETE A PIERROT (ex-USCG *95315*)	MH 8	US Coast Guard Yard, Curtis Bay, Maryland	1955
VERTIERES	MH 9	US Coast Guard Yard, Curtis Bay, Maryland	1956

Displacement, tons: 105
Dimensions, feet (metres): 95 × 20 × 6 *(29 × 6·1 × 1·8)*
Guns: 3—20 mm
Main engines: 4 Cummins diesels; 2 shafts; 2 324 bhp = 20 knots
Range, miles: 1 500
Complement: 15

Former US Coast Guard steel cutters. Acquired on 26 February 1956 and in 1960 respectively.

3 COASTAL PATROL CRAFT

MH 21, MH 22, MH 23.

Displacement, tons: 33 full load
Dimensions, feet (metres): 69·9 × 17·1 × 3·3 *(21·3 × 5·2 × 1)*
Guns: 2—12·7 mm
Main engines: 3 General Motors 8V 71 diesels; 3 shafts; 1 590 hp = 25 knots

Built by Sewart, Louisiana in 1976.

2 COASTAL PATROL CRAFT

MH 5, MH 6

31 ft *(9·5 m)* Bertram "Enforcer" class with inboard/outboard motor.

Also reported, though not confirmed, that *Sans Souci* has been retained as a presidential yacht.

HONDURAS

Ministerial

Minister of Defence:
Brigadier General M. E. Chinchilla Carcamao

Personnel

(a) 1981: 50
(b) 8 months' conscript service

Mercantile Marine

Lloyd's Register of Shipping:
124 vessels of 213 421 tons gross

Diplomatic Representation

Defence Attaché in London:
Lieut-Colonel J. R. Molina

Base

Puerto Cortes

2 "SWIFT 105 FT" CLASS (FAST PATROL CRAFT)

Displacement, tons: 103
Dimensions, feet (metres): 105 × 24 × 5 *(32 × 7·3 × 1·5)*
Main engines: 2 MTU diesels; 7 000 hp = 32 knots
Range, miles: 1 200 at 18 knots
Complement: 16

Delivered by Swiftships, Morgan City in April 1977 and in April 1979.

1 HYDROGRAPHIC LAUNCH

Of 56 ft, transferred from the USA 1976.

4 "SWIFT 65 FT" CLASS (COASTAL PATROL CRAFT)

Name	*No*	*Builder*	*Commissioned*
GEN J. T. CABANAS	GC 6501	Swiftships	Dec 1973
—	GC 6502	Swiftships	Jan 1974
+2			

Displacement, tons: 36·3 full load
Dimensions, feet (metres): 65·3 × 18·4 × 5·2 *(19·9 × 5·6 × 1·6)*
Main engines: 3 General Motors diesels; 3 shafts; 1 590 hp = 27 knots
Range, miles: 2 000 at 22 knots
Complement: 5

Originally built by Swiftships, Morgan City for Haiti. Contract cancelled and Honduras bought the two completed boats. No armament. Delivered in 1977.
Further two with MTU diesels (= 36 knots).

HONG KONG

All the following craft are operated by the Marine District of the Royal Hong Kong Police Force (RHKP).

Senior Officers

District Police Commander:
Sze-to Che-yan CPM JP

Assistant Commissioner:
R. J. L. MacDonald

Personnel

(a) 1981: 71 officers, 330 NCOs, 890 constables
(b) Voluntary service

Mercantile Marine

Lloyd's Register of Shipping:
187 vessels of 1 717 230 tons gross

DELETIONS

1975: Logistic Craft No 24
45 ft Patrol Craft No 5 and 8

POLICE CRAFT

2 COMMAND VESSELS

SEA LION PL 1 **SEA TIGER** PL 2

Displacement, tons: 222·5
Dimensions, feet (metres): 111·3 × 24 × 10·5 *(33·9 × 7·3 × 3·2)*
Gun: 1—5 in MG
Main engines: 2 diesels; 674 bhp = 11·8 knots
Range, miles: 5 200 at 11·8 knots
Complement: 25

Built at Taikoo 1965 (now Hong Kong United Dockyard). Can carry two platoons in addition to complement. Cost $HK 1 778 550.

SEA LION *1979, Dr. Giorgio Arra*

3 + 6 "DAMEN" DESIGN PATROL CRAFT

PL 60 PL 61 PL 62

Displacement, tons: 86
Dimensions, feet (metres): 85·9 × 19·4 × 5·9 *(26·2 × 5·9 × 1·8)*
Gun: 1—5 in MG
Main engines: 2 diesels; 1 300 bhp = 23+ knots
Slow speed engine: 1 diesel; 195 hp = 2—8 knots
Complement: 14

First three delivered February 1980.

PL 60 *1980, Dr Giorgio Arra*

7 PATROL CRAFT

SEA CAT PL 50
SEA PUMA PL 51
SEA LEOPARD PL 52
SEA EAGLE PL 53
SEA HAWK PL 54
SEA LYNX PL 55
SEA FALCON PL 56

Displacement, tons: 82
Dimensions, feet (metres): 78·5 × 17·2 × 5·6 *(23·9 × 5·2 × 1·7)*
Gun: 1—5 in MG
Main engines: 2 Cummins diesels; 1 500 hp = 20·7 knots
Range, miles: 4 000 at 20 knots
Complement: 16

Steel hulled craft built by Thornycroft, Singapore. Delivered May 1972 to May 1973 to the Royal Hong Kong Police. Can carry an extra platoon. Cost $HK 1 873 800.

SEA LYNX *1979, Dr. Giorgio Arra*

1 PATROL CRAFT

SEA HORSE PL 4

Displacement, tons: 72
Dimensions, feet (metres): 78 × 15 × 4·5 *(23·8 × 4·6 × 1·4)*
Gun: 1—5 in MG
Main engines: 3 diesels; 690 hp = 15 knots
Range, miles: 600 at 15 knots
Complement: 21

Built by Thornycroft, Singapore in 1958.

SEA HORSE *1979, RHKP*

9 PATROL CRAFT

SEA ROVER PL 26
SEA FARER PL 27
SEA ROAMER PL 28
SEA RIDER PL 29
SEA NOMAD PL 30
SEA WANDERER PL 31
SEA RAKER PL 32
SEA RESCUER PL 33
SEA RANGER PL 34

Displacement, tons: 52
Dimensions, feet (metres): 70 × 17 × 5·2 *(21·3 × 5·2 × 1·6)*
Gun: 1—5 in MG
Main engines: 2 diesels; 215 bhp = 10 knots
Range, miles: 1 600 at 10 knots
Complement: 12

Built by Hong Kong S.Y. (26-28) in 1954 and Choy Lee S.Y. (29-34 in 1955).

SEA RANGER *1980, Dr. Giorgio Arra*

1 PATROL CRAFT

ISLANDER PL 6

Displacement, tons: 48
Dimensions, feet (metres): 65 × 14·5 × 5·5 *(19·8 × 4·4 × 1·8)*
Main engine: 1 diesel; 152 bhp = 10·5 knots
Range, miles: 1 400 at 9 knots
Complement: 11

ISLANDER *1979, RHKP*

8 PATROL CRAFT

SNIPE PL 9
PUFFIN PL 10
WREN PL 11
MALLARD PL 12
GULL PL 13
TERN PL 14
CORMORANT PL 15
KESTREL PL 16

Displacement, tons: 27·7
Dimensions, feet (metres): 45 × 15 × 7 *(13·7 × 4·6 × 2·1)*
Main engine: 1 diesel; 144 bhp = 9 knots
Range, miles: 1 700 at 8 knots
Complement: 5

Built by Australian Ministry of Munitions in 1946.

KESTREL *1979, Dr. Giorgio Arra*

3 PATROL CRAFT (JET)

JETSTREAM WJB 20
SWIFTSTREAM WJB 21
TIDESTREAM WJB 22

Displacement, tons: 17
Dimensions, feet (metres): 40·3 × 11·6 × 2 *(12·3 × 3·5 × 0·6)*
Main engines: 2 diesels; 370 bhp = 24 knots
Range, miles: 380 at 24 knots
Complement: 5

Built by Choy Lee in 1971.

TIDESTREAM *1974, RHKP*

1 LOGISTIC CRAFT

PANTHER PL 3

Displacement, tons: 37
Dimensions, feet (metres): 58 × 12·5 × 3·6 *(17·7 × 3·8 × 1·2)*
Speed, knots: 16
Range, miles: 240 at 15 knots
Complement: 5

Built by Thornycroft Singapore in 1958.

PANTHER *1976, RHKP*

1 LOGISTIC CRAFT

DRAGON PL 7

Displacement, tons: 18·5
Dimensions, feet (metres): 48·5 × 17·5 × 4·5 *(14·8 × 5·3 × 1·4)*
Main engines: 2 diesels; 700 hp = 20 knots
Range, miles: 300+ at 20 knots
Complement: 6 plus 19 passengers

Built by Hip Hing Cheung shipyard in 1975.

DRAGON *1980, Dr. Giorgio Arra*

11 "22 ft" LIGHT LOGISTIC/GP CRAFT

ARROW PMB 35
DART PMB 36
JAVELIN PMB 37
SLINGSHOT PMB 38
LANCE PMB 39
CROSSBOW PMB 40
BULLET PMB 41
SABRE PMB 42
ASSEGAI PMB 43
SWORD PMB 44
SPEAR PMB 45

Of 4·8 tons and 20 knots with a range of 160 miles at full speed. Built by Choy Lee S.Y. in 1970.

SLINGSHOT *9/1977, Dr. Giorgio Arra*

HUNGARY

Ministerial

Minister of Defence:
Lazos Czinege

Diplomatic Representation

Military and Air Attaché London:
Colonel Imry Mozsik

Personnel

(a) 1981: 500 officers and men
(b) 2 years' national service

Mercantile Marine

Lloyd's Register of Shipping:
22 vessels of 74 997 tons gross

The Navy was dissolved by 1968 but a maritime wing of the Army is still very active on the Danube. The total number of craft operated is about 45.

LIGHT FORCES

10 PATROL CRAFT

Displacement, tons: 100
Gun: 1—14·7 mm
Main engines: 2 diesels

MINE WARFARE FORCES

Several riverine MCM vessels.

SERVICE FORCES

Several troop transports of up to 1 000 tons.
Five small LCUs.
A number of tugs.
Several river icebreakers.
Transport barges which can double as landing craft or bridging element.

ICELAND

Ministerial

Minister of Justice:
Fridjon Thordarson
Minister of Fisheries:
Steingrimur Hermannsson

Senior Officer

Director of Coast Guard:
Pétur Sigurdsson

Personnel

1981: 160 officers and men

Duties

The Coast Guard Service (Landhelgisgaezlan) deals with fishery protection, salvage, rescue, hydrographic research, surveying and lighthouse duties. All ships have at least double the number of berths required for the complement.

Base

Reykjavik

Aircraft

1 Hughes helicopter—500C
1 Sikorsky helicopter—S 76
2 Fokker Friendship—F 27

Research Ships

A number of Government Research Ships bearing RE pennant numbers operate off Iceland.

Mercantile Marine

Lloyd's Register of Shipping:
393 vessels of 188 215 tons gross

COAST GUARD PATROL VESSELS

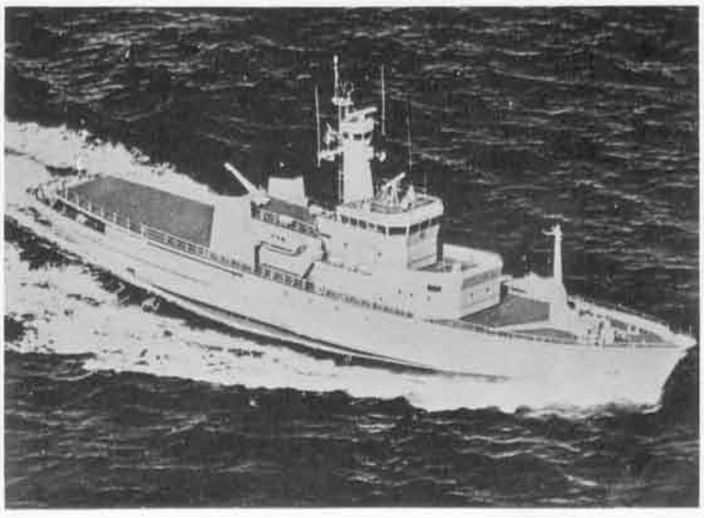
Name	*No.*	*Builders*	*Commissioned*
AEGIR	—	Aalborg Vaerft, Denmark	1968
TYR	—	Dannebrog Vaerft, Denmark	15 Mar 1975

Displacement, tons: 1 200 *(Tyr* 1 300*)*
Dimensions, feet (metres): 204 × 33 × 14·8 *(62·2 × 10 × 4·6) Aegir (Tyr* 205 ft *(62·5 m))*
Gun: 1—57 mm
Main engines: 2 MAN diesels; 2 shafts; 8 000 bhp = 19 knots *(Aegir)*, 20 knots *(Tyr)*
Complement: 22

Aegir was the first new construction patrol vessel for the Icelandic Coast Guard Service for about eight years. Projected in February 1965. Laid down in May 1967. *Tyr,* basically similar to *Aegir,* but a slightly improved design with higher speed was launched by Aarhus Flyedock AS, Denmark on 10 October 1974. Both have helicopter deck and hangar.

Radar: Three search sets.

Sonar: One hull-mounted.



TYR *1980, Icelandic Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
ODINN	—	Aalborg Vaerft, Denmark	Jan 1960

Displacement, tons: 1 000
Dimensions, feet (metres): 187 pp × 33 × 13 *(57 × 10 × 4)*
Gun: 1—57 mm
Main engines: 2 Burmeister & Wain diesels; 2 shafts; 5 050 bhp = 18 knots
Complement: 22

Laid down in January 1959. Launched in September 1959. Refitted in Denmark by Aarhus Flydedock AS late 1975, with twin funnels and helicopter hangar.

Radar: Two search sets.

Sonar: One hull-mounted.

ODINN *1976, Icelandic Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
THOR	—	Aalborg Vaerft, Denmark	late 1951

Displacement, tons: 900
Dimensions, feet (metres): 206 × 31·2 × 13 *(62·8 × 9·5 × 4)*
Gun: 1—57 mm
Main engines: 2—6-cyl MWM diesels; 3 200 bhp = 17 knots
Complement: 22

Launched in 1951. Fitted with helicopter platform during refit in 1972. Now has twin funnels and hangar.

Radar: Two search sets.

Sonar: One hull-mounted set.

THOR *1975, Icelandic Coast Guard*

Name	*No.*	*Builders*	*Commissioned*
ARVAKUR	—	Bodewes, Netherlands	1962

Displacement, tons: 700
Dimensions, feet (metres): 109·2 × 33 × 13 *(33·3 × 10 × 4)*
Gun: 1 MG
Main engine: 1 Deutz diesel; 1 000 bhp = 12 knots
Complement: 14

Built as a lighthouse tender in the Netherlands. Acquired by Iceland and converted for duty in the Coast Guard Service in 1969.

Radar: Two search sets.

ARVAKUR *1980, Icelandic Coast Guard*

INDIA

Ministerial

Minister of Defence:

Headquarters' Appointment

Chief of the Naval Staff:
Admiral R. L. Pereira
Vice Chief of Naval Staff:
Vice-Admiral M. R. Shunkar
Deputy Chief of Naval Staff:
Rear-Admiral D. S. Paintal

Senior Appointments

Flag Officer C in C, Western Naval Command:
Vice-Admiral V. E. C. Barboza
Flag Officer Commanding Western Fleet:
Rear-Admiral A. Mookerjee
Flag Officer C in C, Eastern Naval Command:
Vice-Admiral M. K. Roy
Flag Officer Commanding Eastern Fleet:
Rear-Admiral K. K. Naiyar
Flag Officer, Southern Naval Area:
Rear-Admiral S. Dawson

Diplomatic Representation

Naval Attaché in Bonn:
Commodore H. Johnson
Naval Adviser, Dacca:
Captain R. B. Mukherjee
Naval Attaché in Jakarta:
Captain R. V. Singh
Naval Adviser in London:
Commodore K. N. Dubash
Naval Attaché in Moscow:
Commodore M. N. Vasudeva
Defence Attaché in Washington:
Brigadier Srendra Singh MC

Naval Bases and Establishments

Bombay (C in C Western Fleet, barracks and main Dockyard);
Vishakapatnam (C in C Eastern Command, submarine base, (INS *Virbahu*), submarine school, (INS *Satyavahana*), dockyard and barracks);
Cochin (FO Southern Area Naval Air Station, barracks and professional schools);
Lonavala and Jamnagar (professional schools);
Calcutta, Goa and Port Blair (small bases only);
New Delhi (HQ)

Personnel

(a) 1981: 46 000 officers and ratings (including Naval Air Arm)
(b) Voluntary service

Naval Air Arm

Squadron No.	*Aircraft*	*Role*
300	Seahawk FGA6 (25)	Strike
310	Alize 1050 (10)	ASW
312	5 Super Constellations 5 Ilyushin IL38 May	MR
321	Alouette III (7)	SAR
330	Sea Kings (15)	ASW
331	Alouette III (7)	ASW
550	Alize, Alouette	Training
561	2 Devon 4 Hughes 300, 4 Vampire T-55, 7 HJT 16-Kiran	Training

Notes: (a) Six Sea Harriers ordered 1978. To replace Seahawks from 1981.
(b) The Alizes are completely modernised, good until 1990.

Prefix to Ships' Names

INS

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Patrol Submarines	8	(?)
Attack Carrier (Medium)	1	—
Cruiser	1	—
Destroyers	3	—
Frigates	24	3
Corvettes	3	(4)
Fast Attack Craft—Missile	16	—
Fast Attack Craft—Patrol	3	7
Large Patrol Craft	1	—
Landing Ship	1	—
Landing Craft	6	—
LCUs	4	—
Minesweepers—Ocean	6	—
Minesweepers—Coastal	4	—
Minesweepers—Inshore	4	—
Survey Ships	5	—
Submarine Tender	1	—
Submarine Rescue Ship	1	—
Replenishment Tankers	2	—
Support Tankers	4	1
Repair Ship	1	—
Ocean Tugs	3	—
Harbour Craft	11	—
TRVs	2	—

Mercantile Marine

Lloyd's Register of Shipping:
616 vessels of 5 911 367 tons gross

DELETIONS

Note: *Kirpan, Kuthar* and "Poluchat" class transferred to Coast Guard section.

Cruiser

1978 *Delhi* (May)

Destroyers

1976 *Rana, Rajput* (British "R" class)
1979 *Ranjit*

Frigates

1975 *Ganga* and *Gomati* ("Hunt" class) paid off
1979 *Godavari, Kaveri, Tir*

Survey Ship

1975 *Investigator* ("River" class) paid off

Light Forces

1974 *Ajay* and *Akshay* to Bangladesh, *Amar* to Mauritius (Apr)
1975 *Savitri, Sharayu, Subhadra, Suvarna* paid off

Mine Warfare Forces

1973 *Konkan* (last of 6 "Bangor" class) paid off

Harbour Tankers

1976 *Chilka, Sambhar*

PENNANT LIST

Note: Coast Guard forces listed separately at end of section.

Submarines

S 20	Kursura
S 21	Karanj
S 22	Kanderi
S 23	Kalvari
S 40	Vela
S 41	Vagir
S 42	Vagli
S 43	Vagsheer

Aircraft Carrier

R 11	Vikrant

Cruiser

C 60	Mysore

Destroyers

—	Rajput
—	Rana
—	Ranjit

Frigates

F 11	Jamuna (Survey)
F 31	Brahmaputra
F 32	Himgiri
F 33	Nilgiri
F 34	Dunagiri
F 35	Udaygiri
F 36	Taragiri
F 37	Beas
F 38	Vindhyagiri
F 39	Betwa
F 40	Talwar
F 43	Trishul
F 46	Kistna
F 95	Sutlej (Survey)

Corvettes

K 71	Vijay Durg
K 72	Sindhu Durg
K 73	Hos Durg

Light Forces
(including "Petya" class with P numbers)

K 82	Veer
K 83	Vidyut
K 84	Vijeta
K 85	Vinash
K 86	Nipat
K 87	Nashat
K 88	Nirbhik
K 89	Nirghat
K 90	Prachand
K 91	Pralaya
K 92	Pratap
K 93	Prabal
K 94	Chapal
K 95	Chamak
K 96	Chatak
K 97	Charag
P 68	Arnala
P 69	Androth
P 73	Anjadip
P 74	Andaman
P 75	Amini
P 77	Kamorta
P 78	Kadmath
P 79	Kiltan
P 80	Kavaratti
P 81	Katchal
P 82	Kanjar
P 83	Amindivi
T 35	Abhay
T 51	SDB Mk 2
T 52	SDB Mk 2
T 53	SDB Mk 2

Mine Warfare Forces

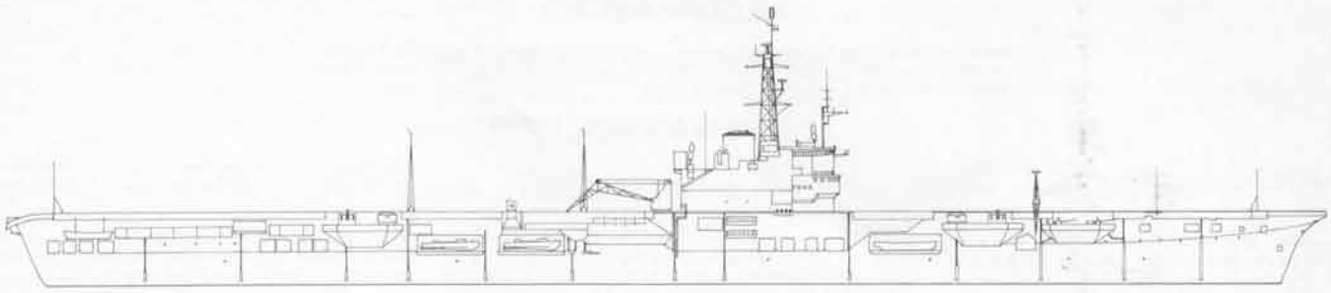
M 61	Pondicherry
M 62	Porbandar
M 63	Bedi
M 64	Bhavnagar
M 65	Alleppey
M 66	Ratnagiri
M 88	Bhaktal
M 89	Bulsar
M 90	Cuddalore
M 91	Cannamore
M 92	Karwar
M 93	Kakinada
M 2705	Bimlipitan
M 2707	Bassein

Amphibious Forces

L 11	Magar
L 12	Gharial
L 13	Guldar
L 14	Ghorpad
L 15	Kesari
L 16	Shardul
L 17	Sharab

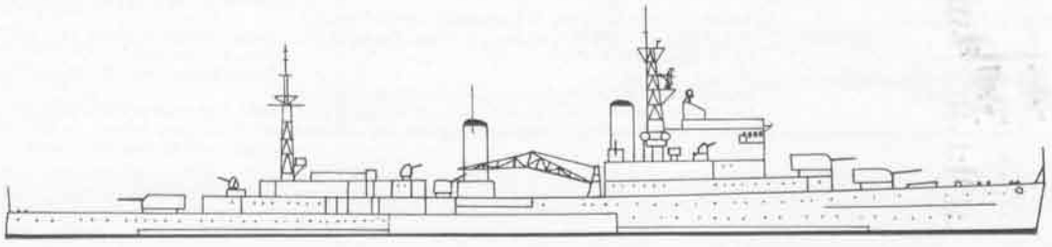
Service Forces

A 14	Amba
A 15	Nistar
A 50	Deepak
A 57	Shakti
A 139	Darshak
A 306	Dharini
A 1751	Gaj

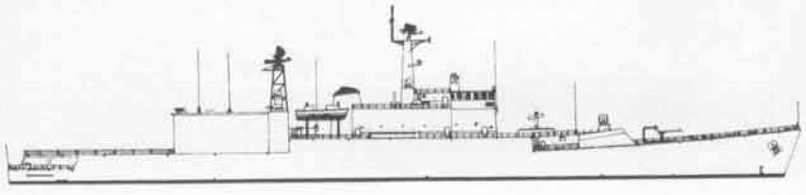


VIKRANT

Ian Sturton



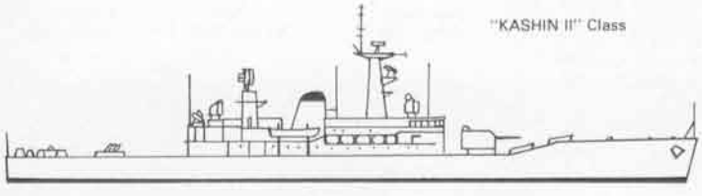
MYSORE



"GODAVARI" Class

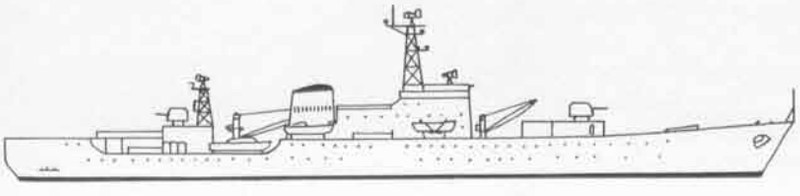
"KASHIN II" Class

S. Breyer



"LEANDER" Class

"PETYA" Class



AMBA

"NATYA" Class

SUBMARINES

Note: Although the Indian Navy decided in 1976 that it would build its own submarines the final decision is not yet known. The first of class is to be built in the chosen designer's yard, the remainder in Bombay. The choice now seems most likely to go to the Howaldtswerke 1500 design—if this is so the addition of the SUT torpedo to the order may have been the deciding factor.

8 Ex-SOVIET "FOXTROT" CLASS

KURSURA S 20
KARANJ S 21
KANDERI S 22
KALVARI S 23
VELA S 40
VAGIR S 41
VAGLI S 42
VAGSHEER S 43

Displacement, tons: 1 950 surfaced; 2 400 dived
Dimensions, feet (metres): 300·1 × 24·6 × 20
(91·5 × 7·5 × 6·1)
Torpedo tubes: 10—21 in *(533 mm)* (20 torpedoes carried)
Main machinery: 3 diesels; 3 shafts; 6 000 bhp; 3 electric motors; 6 000 hp
Speed, knots: 18 surfaced; 18 dived
Complement: 75

KARANJ

1/1978

Kalvari arrived in India on 16 July 1968, *Kanderi* in January 1969, *Karanj* in October 1970 and *Kursura* in December 1970. *Vela* November 1973, *Vagir* December 1973, *Vagli* September 1974, *Vagsheer* May 1975.

Additions: There are reports, so far unconfirmed, that a further pair may be transferred later.

AIRCRAFT CARRIER

Note: It is reported that it is planned to acquire a second carrier. There is a report that this might be HMS *Triumph* although there is no suggestion as to whether this would be for spares or for a major conversion as a second operational carrier.

1 Ex-BRITISH "MAJESTIC" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
VIKRANT (ex-HMS *Hercules*)	R 11	Vickers-Armstrong Ltd, Tyne	14 Oct 1943	22 Sep 1945	4 Mar 1961

Displacement, tons: 16 000 standard; 19 500 full load
Dimensions, feet (metres): 700 × 80 × 24 *(213·4 × 39 × 7·3)*
Width, feet (metres): 128 *(39)*
Aircraft: 22 capacity (18 Sea Hawk, 4 Alize)
Guns: 15—40 mm/60 (4 twin, 7 single)
Main engines: Parsons single reduction geared turbines; 40 000 shp; 2 shafts
Boilers: 4 Admiralty 3-drum; 400 psi; 700°F
Speed, knots: 24·5
Oil fuel, tons: 3 200
Range, miles: 12 000 at 14 knots; 6 200 at 23 knots
Complement: 1 075 (peace); 1 345 (war)

Acquired from the UK in January 1957 after having been suspended in May 1946 when structurally almost complete and 75 per cent fitted out. Taken in hand by Harland & Wolff Ltd, Belfast, in April 1957 for completion in 1961. Commissioned on 4 March 1961 and renamed *Vikrant*.
Completed extensive overhaul—1973 to August 1974.

Aircraft: Harrier trials in mid-1972 showed promise. First batch of Sea Harriers ordered 1978, more to follow. Replaced Sea Hawks after 1979-81 refit.

Engineering: One set of turbines and two boilers are installed side by side in each of the two propelling machinery spaces, on the unit system, so that the starboard propeller shaft is longer than the port.

Flight deck: The aircraft, including strike and anti-submarine aircraft, operate from an angled deck with steam catapult, landing sights and two electrically operated lifts.

Habitability: Partially air-conditioned and insulated for tropical service, the ship's sides being sprayed with asbestos cement instead of being lagged. Separate messes and dining halls.

Radar: Search: Type 960, Type 277.
Tactical: Type 293.
Miscellaneous: Type 963 Carrier Controlled Approach.

Refit: Major two year refit began in January 1979 (see *Aircraft* note). Ski jump will not be fitted due to lack of space and catapult will be retained for Alizé.

VIKRANT — *1971, John G. Callis*

CRUISER

1 Ex-BRITISH "FIJI" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MYSORE (ex-HMS *Nigeria*)	C 60	Vickers-Armstrong Ltd, Tyne	8 Feb 1938	18 July 1939	23 Sep 1940

Displacement, tons: 8 700 standard; 11 040 full load
Dimensions, feet (metres): 555·5 × 62 × 21 *(169·4 × 18·9 × 6·4)*
Guns: 9—6 in *(152 mm)*/50 (triple Vickers); 8—4 in *(102 mm)*, (twin Mk 19); 12—40 mm/60 (5 twin, 2 single)
Armour: Side 3·5 in *(89 mm)*; Deck 2 in *(51 mm)*; Turrets 2 in *(51 mm)*
Main engines: Parsons geared turbines; 4 shafts; 72 500 shp
Boilers: 4 Admiralty 3-drum type
Speed, knots: 31·5 (designed)
Oil fuel, tons: 1 700
Range, miles: 4 500 at 20 knots
Complement: 800

Flagship at the Battle of Porsanger Fjord September 1941. Purchased from the UK on 8 April 1954 for £300 000. Extensively refitted and reconstructed by Cammell Laird & Co Ltd, Birkenhead, before commissioning. Formally handed over to the Indian Navy at Birkenhead and renamed *Mysore* on 29 August 1957. Involved in two serious collisions, the second in late 1972 with *Beas*, resulting in two months of repairs. Flagship of training squadron in place of *Delhi* May 1978.

Radar: Search: Type 960, Type 277.
Tactical: Type 293.
Fire control: Type 274 for 6-in guns; Type 275 for 4-in guns.

MYSORE (*Vija Durg* alongside) — *8/1977*

Reconstruction: Ship formerly had tripod masts. During reconstruction the triple 6-in turret in "X" position and the six 21-in torpedo tubes (tripled) were removed, the bridge was modified, two lattice masts were stepped, all electrical equipment was replaced and the engine room and other parts of the ship were refitted.

DESTROYERS

3 SOVIET "KASHIN II" CLASS

RAJPUT **RANA** **RANJIT**

Displacement, tons: 3 950 standard; 4 950 full load
Dimensions, feet (metres): 480·5 × 51·8 × 15·7 *(146·5 × 15·8 × 4·8)*
Aircraft: One helicopter
Missiles: SSM: 4 SS-N-2C; SAM: 4 SA-N-1 (2 twin)
Guns: 2—76 mm L59 (twin, forward); 4—30 mm L65
A/S weapons: 2—MBU 6000
Torpedo tubes: 5—21 in *(533 mm)* (quin)
Main engines: 8 gas turbines; 96 000 shp; 2 shafts = 35 knots
Range, miles: 5 000 at 18 knots; 900 at 35 knots
Complement: 320

First transferred in September 1980. All built as new construction for India at Nikolayev.

Radar: Surveillance: Head Net C and Big Net A.
Missile control: Two Peel Group.
Fire control: One Owl Screech; two Drum Tilt.
Navigation: Two Don Kay.
IFF: Two High Pole B.

Sonar: Hull-mounted and VDS.

RAJPUT — *9/1980, Selçuk Emre*

FRIGATES

Note: It is reported that India has approached the Netherlands for assistance in designing a new class of frigate with gas turbines to be built as successors to the "Godavari" class.

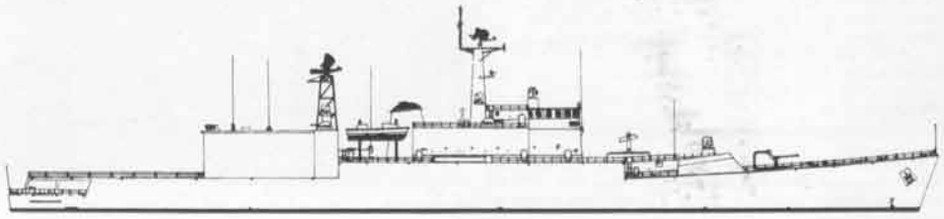
0 + 6 "GODAVARI" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
GODAVARI	—	Mazagon Docks Ltd, Bombay	2 June 1978	1980	1983
GOMATI	—	Mazagon Docks Ltd, Bombay	1980	—	1985
GANGA	—	Mazagon Docks Ltd, Bombay	—	—	—

Displacement, tons: 3 850 full load
Dimensions, feet (metres): 414·6 × 47·6 × 29·5 *(126·4 × 14·5 × 9)*
Aircraft: 2 Sea King helicopters
Missiles: SSM: 2 SS-N-2B (single cells); SAM: 1 SA-N-4 (mid-line)
Guns: 1—76 mm (see note); 2—7Gatlings
Main engines: 2 geared turbines; 2 shafts; 30 000 hp = 27 knots (first three)
2 gas turbines = 30 knots (second three)
Range, miles: 4 500 at 12 knots
Complement: 250

A further modification of the original "Leander" design. As the last two of the previous "Leander" programme are reported to carry the Canadian Bear-Trap haul-down gear it is possible that this may be included in these ships. What is particularly noteworthy is the embarkation of two Sea Kings (width overall approximately 16 ft) on a smaller beam than the Canadian "DDH 280" class.

Guns: Reported to be Indian built 76 mm OTO Melara.



"GODAVARI" Class *1979, P. D. Jones*

Radar: Surface-air search: Head Net C and HSA LW-05.
Missile control: Pop Group.
Gun control: Drum Tilt.
Navigation/helo control: ? Type 978.

Sonar: ? Type 184 as in "Leander" class.

Torpedoes: Reported that A/S torpedoes are to be fitted.

6 BRITISH "LEANDER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
HIMGIRI	F 32	Mazagon Docks Ltd, Bombay	1967	6 May 1970	23 Nov 1974
NILGIRI	F 33	Mazagon Docks Ltd, Bombay	Oct 1966	23 Oct 1968	3 June 1972
DUNAGIRI	F 34	Mazagon Docks Ltd, Bombay	14 Sep 1970	24 Oct 1972	18 Feb 1976
UDAYGIRI	F 35	Mazagon Docks Ltd, Bombay	Jan 1973	9 Mar 1974	1 Feb 1977
TARAGIRI	F 36	Mazagon Docks Ltd, Bombay	1974	25 Oct 1976	Sep 1979
VINDHYAGIRI	F 38	Mazagon Docks Ltd, Bombay	1975	12 Nov 1977	1980

Displacement, tons: 2 450 standard; 2 962 full load
Dimensions, feet (metres): 372 × 43 × 18 *(113·4 × 13·1 × 5·5)*
Aircraft: 1 Alouette III helicopter in first four; 1 Sea King in F 36 and 38 (see note)
Missiles: SAM: Seacat (est 32, 2 quad launchers) (all but *Nilgiri* and *Himgiri*—one launcher)
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6); 2—20 mm/70
A/S weapons: 1 Limbo 3-barrelled DC mortar (except in F 36 and 38); A/S torpedo tubes (F 36 and 38)
Main engines: 2 geared turbines; 30 000 shp
Boilers: 2
Oil fuel, tons: 460
Speed, knots: 27
Range, miles: 4 500 at 12 knots
Complement: 267 (17 officers and 250 ratings)

The first major warships built in Indian yards. Of similar design to the "Broad-beam Leanders" but with several differences. In the first four the hangar was provided with telescopic extension to take the Alouette III helicopter while in the last pair, a much-changed design, the Limbo has been removed as well as VDS and the aircraft space increased to make way for a Sea King helicopter with Canadian Bear-Trap haul-down gear. In these two an open deck has been left below flight deck for handling mooring gear. After the first ship Dutch radar was adopted.

Missiles: *Nilgiri* and *Himgiri* have one Seacat launcher with UK GWS22 control. Remainder have two Seacat launchers with two Dutch M44 directors.

Radar: Air surveillance: One Type 965 *(Nilgiri)*.
Remainder: HSA LW-05.

Sonar: VDS in first three ships only.
All carry Type 184.

Squadron: Form 14th Frigate Squadron.

UDAYGIRI *6/1977, C. and S. Taylor*

UDAYGIRI *1978*

12 Ex-SOVIET "PETYA II" CLASS

ARNALA P 68
ANDROTH P 69
ANJADIP P 73
ANDAMAN P 74
AMINI P 75
KAMORTA P 77
KADMATH P 78
KILTAN P 79
KAVARATTI P 80
KATCHAL P 81
KANJAR P 82
AMINDIVI P 83

Displacement, tons: 950 standard; 1 100 full load
Dimensions, feet (metres): 270 × 29·9 × 10·5 *(82·3 × 9·1 × 3·2)*
Guns: 4—3 in *(76 mm)* (2 twin)
A/S weapons: 2 MBU 6 000 (16-barrelled rocket launchers); 2 internal DC racks
Torpedo tubes: 3—21 in *(533 mm)*
Mines: Have minerails
Main engines: 2 gas turbines; 30 000 hp; 1 diesel; 6 000 hp; 3 shafts
Speed, knots: 35
Range, miles: 4 000 at 20 knots
Complement: 98

Transferred to the Indian Navy since 1969 *(Kamorta* and *Kadmath)*. *Andaman* delivered March 1974, *Amini* late 1974. All are of an export version of "Petya II" class with simplified communications.
Form 32nd Frigate Squadron.

Radar: Surface search: One Strut Curve.
Fire control: One Hawk Screech.
Navigation: One Don 2.
IFF: One High Pole B.

Sonar: One Hercules.

ANDAMAN *6/1977*

2 Ex-BRITISH "WHITBY" CLASS (TYPE 12)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TALWAR	F 40	Cammell Laird & Co Ltd, Birkenhead	1957	18 July 1958	1960
TRISHUL	F 43	Harland & Wolff Ltd, Belfast	1957	18 June 1959	1960

Displacement, tons: 2 144 standard; 2 545 full load *(Talwar)*, 2 557 *(Trishul)*
Dimensions, feet (metres): 369·8 × 41 × 17·8 (screws) *(112·7 × 12·5 × 5·4)*
Missiles: SSM: 2 SS-N-2
Guns: 4—40 mm (1 twin before Limbos, 2 singles abaft funnel)
A/S weapons: 2 Limbo 3-barrelled DC mortars
Main engines: 2 sets geared turbines; 30 000 shp; 2 shafts
Boilers: 2 Babcock & Wilcox
Oil fuel, tons: 400
Speed, knots: 30
Range, miles: 4 500 at 12 knots
Complement: 231 (11 officers, 220 men)

Generally similar to the British frigates of the "Whitby" class, but slightly modified to suit Indian conditions. *Trishul* acts as Squadron commander of 15th Frigate Squadron.

Missiles: In late 1975 *Talwar* was fitted with two SS-N-2 missile launchers from an "Osa" class in place of the 4·5-in turret. During 1977-78 refit *Trishul* was similarly fitted.

Radar: Tactical: Type 293 and 277.
Fire control: I Band. (FPS 6 director).
Missile control: One Square Tie.

TALWAR *1976*

3 Ex-BRITISH "LEOPARD" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BRAHMAPUTRA (ex-*Panther*)	F 31	John Brown & Co Ltd, Clydebank	1956	15 Mar 1957	28 Mar 1958
BEAS	F 37	Vickers-Armstrong Ltd, Tyne	1957	9 Oct 1958	24 May 1960
BETWA	F 39	Vickers-Armstrong Ltd, Tyne	1957	15 Sep 1959	8 Dec 1960

Displacement, tons: 2 251 standard; 2 515 full load
Dimensions, feet (metres): 339·8 × 40 × 16 *(103·6 × 12·2 × 4·9)*
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6); 2—40 mm/60
A/S weapons: 1 Squid 3-barrelled DC mortar
Main engines: 8 Admiralty standard range diesels; 2 shafts; 14 400 bhp
Speed, knots: 24
Range, miles: 7 500 at 16 knots
Complement: 210

Brahmaputra, orignally ordered as *Panther* for the Royal Navy on 28 June 1951, was the first major warship to be built in the UK for the Indian Navy since India became independent. All three ships are generally similar to the British frigates of the "Leopard" class, but modified to suit Indian conditions. All now modified as in photograph with deckhouse in place of after turret.

Radar: Search: Type 960.
Tactical: Type 293.
Fire control: Type 275.

BRAHMAPUTRA *1978*

1 Ex-BRITISH "BLACK SWAN" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KISTNA	F 46	Yarrow & Co Ltd, Scotstoun, Glasgow	14 July 1942	22 Apr 1943	23 Aug 1943

Displacement, tons: 1 470 standard; 1 925 full load
Dimensions, feet (metres): 299·5 × 38·5 × 11·5 (screws) *(91·3 × 11·7 × 3·5)*
Guns: 4—4 in *(102 mm)* (twin Mk XVI); 4—40 mm
A/S weapons: 2 DCTs
Main engines: Parsons geared turbines; 2 shafts; 4 300 shp
Boilers: Two 3-drum type
Speed, knots: 19
Oil fuel, tons: 370
Range, miles: 4 500 at 12 knots
Complement: 210

Former sloop of the British "Black Swan" class built for India and modified to suit Indian conditions.

Radar: Type 293 and Type 285.

KISTNA

CORVETTES

3 + (?) Ex-SOVIET "NANUCHKA II" CLASS

VIJAY DURG K 71 **HOS DURG** K 73
SINDHU DURG K 72

Displacement, tons: 780 standard; 900 full load
Dimensions, feet (metres): 197·8 × 40 × 10·2 *(60·3 × 12·2 × 3·1)*
Missiles: SSM; 4—SS-N-2B (single cells); SAM; 1—SA-N-4
Guns: 2—57 mm (twin)
Main engines: 6 M503A diesels; 24 000 shp; 3 shafts
Speed, knots: 34
Range, miles: 4 500 at 15 knots
Complement: 70

Vijay Durg delivered March 1977. Reported that a total of eight is to be delivered.

Radar: Search: Band Stand.
Fire control: Pop Group, Muff Cob.
Navigation: Don.

The Band Stand radar is mounted lower than in Soviet ships of this class due to the absence of Fish Bowl with the use of SS-N-2 missiles in place of SS-N-9.

VIJAY DURG *1979*

LIGHT FORCES

8 Ex-SOVIET "OSA I" and 8 "OSA II" CLASSES (FAST ATTACK CRAFT—MISSILE)

VEER K 82
VIDYUT K 83
VIJETA K 84
VINASH K 85
NIPAT K 86
NASHAT K 87
NIRBHIK K 88
NIRGHAT K 89
***PRACHAND** K 90
***PRALAYA** K 91
***PRATAP** K 92
***PRABAL** K 93
***CHAPAL** K 94
***CHAMAK** K 95
***CHATAK** K 96
***CHARAG** K 97

*"Osa II"

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2B (single cells)
Guns: 4—30 mm L65 (2 twin)
Main engines: 3 (M503A, "Osa I"; M504, "Osa II") diesels; 3 shafts; 12 000 bhp ("Osa I"), 15 000 bhp ("Osa II") = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Further eight delivered February-October 1976. ("Osa II" class). Three others reported sunk in Indo-Pakistani War 1971.

Missiles: *Vijeta* had two SS-N-2 launchers transferred to *Talwar* in late 1975 and two to *Trishul* in 1978.

Modernisation: "Osa I" class being modified with new electronics and, possibly, engines.

Radar: Search: Square Tie.
Fire control: Drum Tilt.
IFF: High Pole and Square Head.

INDIAN "OSA II" Class *6/1977*

3 + ?7 "SDB MARK 2" CLASS (FAST ATTACK CRAFT—PATROL)

T 51 **T 52** **T 53**

Displacement, tons: 203 full load
Dimensions, feet (metres): 123 × 24·6 × 5·9 *(37·5 × 7·5 × 1·8)*
Gun: 1—40/60 mm Bofors
A/S weapons: 18—Mk 7 DCs; 10—Mk 12 DCs
Main engines: 2 Paxman Deltic diesels; 2 shafts; 6 880 bhp = 29 knots
Auxiliary propulsion: 1—Kirloskar-Cummins diesel on centre shaft; 165 bhp = 4 knots
Range, miles: 1 400 at 14 knots

First launched 16 July 1976, started trials September 1977. T 53 launched spring 1978. All built by Garden Reach S.Y., Calcutta. Indian Customs Service to purchase a number of this class—"for but not with" armament.

1 "ABHAY" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
ABHAY	T 35	Hooghly Docking & Engineering Co Ltd, Calcutta	13 Nov 1961

Displacement, tons: 120 standard; 151 full load
Dimensions, feet (metres): 117·2 × 20 × 7 *(35·7 × 6·1 × 2·1)*
Gun: 1—40 mm
Main engines: 2 diesels; speed = 18 knots
Oil fuel, tons: 23
Complement: 35

Generally similar to the "Ford" class in the Royal Navy. Originally a class of six. *Ajay* and *Akshay* transferred to Bangladesh 1974, *Amar* to Mauritius April 1974.

AMPHIBIOUS FORCES

6 Ex-SOVIET "POLNOCHNIY" CLASS (LCTs)

GHARIAL L 12 **GHORPAD** L 14 **SHARDUL** L 16
GULDAR L 13 **KESARI** L 15 **SHARAB** L 17

Displacement, tons: 780 standard; 800 full load (L 12 and L 13); 700 standard; 1 150 full load (remainder)
Dimensions, feet (metres): 239·5 × 29·2 × 5·8 *(73 × 8·9 × 1·8)* (L 12 and L 13); 269 × 32·8 × 5·8 *(82 × 10 × 1·8)* (remainder)
Guns: 2—25 mm (twin) (L 12 and L 13); 4—30 mm (twins) (remainder); 2—140 mm rocket launchers (18 tubes)
Main engines: 2 diesels; 5 000 bhp = 18 knots (L 12 and 13), 20 knots (remainder)
Complement: 40

First pair ("Polnochniy I" class) transferred by USSR direct from Poland in 1966, *Ghorpad* in 1975, *Kesari* September 1975, *Shardul* December 1975 and *Sharab* March 1976; 350 ton cargo in last four, 200 in first two. Further six reported to have been ordered.

Radar: Drum Tilt not fitted.
Navigation: Don 2.

1 Ex-BRITISH LST 3

MAGAR (ex-HMS *Avenger*) L 11

Displacement, tons: 2 256 light; 4 980 full load
Dimensions, feet (metres): 347·5 × 55·2 × 11·2 *(106 × 16·8 × 3·4)*
Guns: 2—40 mm; 6—20 mm; (2 twin, 2 single)
Main engines: Triple expansion; 2 shafts; 5 500 ihp = 13 knots

4 INDIAN LANDING CRAFT UTILITY

VASCO DA GAMA +3

Dimensions, feet (metres): 175·8 × 26·2 × 4 *(53·6 × 8 × 1·2)*
Guns: 2—40 mm
A/S weapons: DCs
Range, miles: 1 000 cruising

A new design, of which two were built at Goa S.Y. (subsidiary of Mazagon Docks Ltd) and two by Hooghly D. and E. Co. First Goa craft *(Vasco da Gama)* launched 29 November 1978 and second on 14 January 1979. First Hooghly craft commissioned 4 December 1978. Capacity of 125 men or 25 tons.

There is also LCT 4294 (ex-1294), yard craft of 200 tons, speed 9·5 knots.

MINE WARFARE FORCES

6 Ex-SOVIET "NATYA" CLASS (MINESWEEPERS—OCEAN)

PONDICHERRY M 61 **PORBANDAR** M 62 **BEDI** M 63
BHAVNAGAR M 64 **ALLEPPEY** M 65 **RATNAGIRI** M 66

Displacement, tons: 650 standard; 950 full load
Dimensions, feet (metres): 200·1 × 32·8 × 11·5 *(61 × 10 × 3·5)*
Guns: 4—30 mm L65 (twins); 4—25 mm L70 (twins)
A/S weapons: 2—MBU (5-barrelled)
Mines: Can carry 10
Main engines: 2 diesels; 2 shafts; 8 000 shp = 20 knots
Complement: 50

First pair transferred early 1978. *Alleppey* and *Ratnagiri* left the Baltic in July 1980. Steel hulls.

Radar: Fire control: Drum Tilt.
Navigation: Don 2.
IFF: Two Square Head; one High Pole B.

ALLEPPEY 7/1980

4 Ex-BRITISH "TON" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
CUDDALORE (ex-HMS *Wennington*)	M 90	J. S. Doig Ltd, Grimsby	1955
CANNAMORE (ex-HMS *Whitton*)	M 91	Fleetlands Shipyard Ltd, Gosport	1956
KARWAR (ex-HMS *Overton*)	M 92	Camper & Nicholson Ltd, Gosport	1956
KAKINADA (ex-HMS *Durweston*)	M 93	Dorset Yacht Co Ltd, Hamworthy	1955

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·6 × 8·4 × 2·5)*
Gun: 1—40 mm
Main engines: Napier Deltic diesels; 2 shafts; 3 000 bhp = 15 knots
Oil fuel, tons: 45
Range, miles: 3 000 at 8 knots
Complement: 29

"Ton" class coastal minesweepers of wooden construction built for the Royal Navy, but transferred from the UK to the Indian Navy in 1956. *Cannamore* was launched 30 January 1956, *Karwar* was launched 30 January 1956. *Cuddalore* and *Kakinada* were taken over in August 1956, and sailed for India in November-December 1956. Named after minor ports in India. Constitute the 18th Mine Counter Measures Squadron, together with the inshore minesweepers.

KAKINADA 1977

4 "HAM" CLASS (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
BHAKTAL	M 88	Mazagon Docks Ltd, Bombay	1968
BULSAR	M 89	Mazagon Docks Ltd, Bombay	1970
BIMLIPITAN (ex-HMS *Hildersham*)	M 2705	Vosper Ltd, Portsmouth	1954
BASSEIN (ex-HMS *Littleham*)	M 2707	Brooke Marine Ltd, Oulton Broad, Lowestoft	1954

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 107·5 × 22 × 5·8 *(32·8 × 6·7 × 1·8)*
Gun: 1—20 mm
Main engines: 2 Paxman diesels; 1 100 bhp = 14 knots (9 knots sweeping)
Oil fuel, tons: 15
Complement: 15

Of wooden construction two of which were built for the Royal Navy but transferred from the UK to the Indian Navy in 1955. *Bassein* was launched on 4 May 1954; *Bimlipitan* was launched on 5 February 1954. *Bhaktal* was launched in April 1967, and *Bulsar* on 17 May 1969.

BASSEIN 1971, A. & J. Pavia

SURVEY SHIPS

Name	*No.*	*Builders*	*Commissioned*
DARSHAK	A 139	Hindustan Shipyard, Vishakapatnam	28 Dec 1964

Displacement, tons: 2 790
Dimensions, feet (metres): 319 × 49 × 19 *(97·2 × 14·9 × 5·8)*
Aircraft: 1 helicopter
Main engines: 2 diesel-electric units; 3 000 bhp
Speed, knots: 16
Complement: 150

First ship built by Hindustan Shipyard for the Navy. Launched on 2 November 1959. The ship is all welded.

3 "SANDHAYAK" CLASS

Name	*No.*	*Builders*	*Commissioned*
SANDHAYAK	—	Garden Reach D.Y. Calcutta	1979
NIRDESHAK	—	Garden Reach D.Y. Calcutta	1980
GAVESHANI	—	Garden Reach D.Y. Calcutta	1981

Displacement, tons: 1 830 full load
Dimensions, feet (metres): 281·3 × 42 × 11 *(85·8 × 12·8 × 3·3)*
Aircraft: 1—Alouette III helicopter
Guns: 2—40 mm Bofors
Main engines: 2 GRSE/MAN diesels; 3 920 bhp; 2 shafts
Speed, knots: 16·8
Range, miles: 6 000 at 14 knots

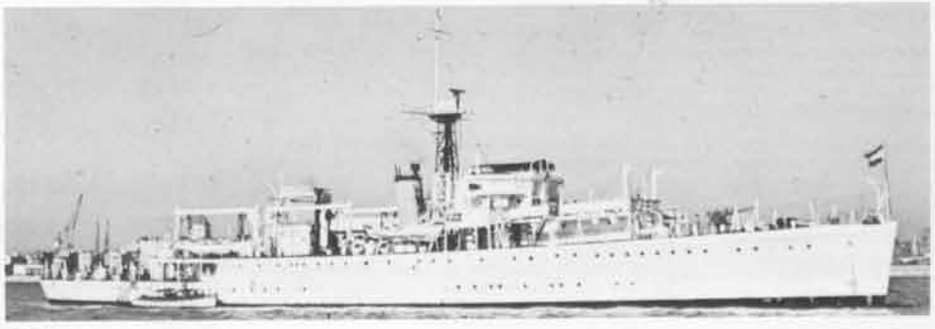
Sandhayak launched 6 April 1977. *Nirdeshak* laid down 15 November 1976 (launched 17 November 1978) and *Gaveshani* laid down on 18 June 1977.

2 "SUTLEJ" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
JAMUNA (ex-*Jumna*)	F 11	Wm. Denny & Bros Ltd, Dumbarton	20 Feb 1940	16 Nov 1940	13 May 1941
SUTLEJ	F 95	Wm. Denny & Bros Ltd, Dumbarton	4 Jan 1940	10 Oct 1940	23 Apr 1941

Displacement, tons: 1 300 standard; 1 750 full load
Dimensions, feet (metres): 292·5 × 37·5 × 11·5 *(89·2 × 11·4 × 3·5)*
Gun: 1—40 mm
Main engines: Parsons geared turbines 3 600 shp; 2 shafts
Boilers: 2 Admiralty 3-drum
Speed, knots: 18
Oil fuel, tons: 370
Range, miles: 5 600 at 12 knots
Complement: 150

Former frigates employed as survey ships since 1957 and 1955 respectively. Both ships are generally similar to the former British frigates of the "Egret" class. To be replaced by second and third ships of the "Sandhayak" class.



JAMUNA *11/1975, P. Elliott*

SERVICE FORCES

1 Ex-SOVIET "UGRA" CLASS (SUBMARINE TENDER)

AMBA A 14

Displacement, tons: 6 750 light; 9 500 full load
Dimensions, feet (metres): 463·8 × 58·1 × 21·3 *(141·4 × 17·7 × 6·5)*
Guns: 8—57 mm (twins)
Main engines: 4 diesels; 2 shafts; 14 000 bhp = 20 knots
Range, miles: 10 000 at 12 knots
Complement: 300

Acquired from the USSR in 1968. Provision for helicopter. Can accommodate 750. Two cranes, one of 6 tons and one of 10 tons.

Radar: Search: One Strut Curve.
Fire control: Two Muff Cob.
Navigation: One Don 2.
IFF: Two Square Head; one High Pole A.

AMBA *1977*

1 Ex-SOVIET "VALDAY" CLASS (ex-T 58) (SUBMARINE RESCUE SHIP)

NISTAR A 15

Displacement, tons: 725 standard; 850 full load
Dimensions, feet (metres): 229·6 × 29·5 × 7·9 *(70 × 9 × 2·4)*
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 18 knots
Complement: 82

Converted from a fleet minesweeper to a submarine rescue ship and transferred from the USSR late 1971. Carries diving-bell, recompression chamber and two rescue chambers aft.

Radar: Navigation: One Don 2.

1 REPAIR SHIP

DHARINI (ex-*La Petite Hermine*) A 306

Displacement, tons: 6 000 (oil capacity 1 000)
Dimensions, feet (metres): 324·7 × 45·6 × 13·3 *(99 × 13·9 × 4)*
Main engines: Triple expansion; 809 ihp = 9 knots
Oil fuel, tons: 621

Cargo ship built by Foundation Maritime Ltd, Canada as *Ketowna Park*. Launched 25 July 1944. Sold to India for commercial use in 1953. Transferred to Navy in 1957. Converted and commissioned in May 1960. Probably due for deletion.

DHARINI *1964, Indian Navy*

2 REPLENISHMENT TANKERS

Name	*No.*	*Builders*	*Commissioned*
DEEPAK	A 50	Bremer-Vulkan	1967
SHAKTI	A 57	Bremer-Vulkan	31 Dec 1975

Displacement, tons: 15 828
Measurement, tons: 12 690·6 GRT
Dimensions, feet (metres): 630·7 × 75·5 × 30 *(192·3 × 23 × 9·2)*
Guns: 3—40 mm; 2—20 mm
Main engine: 1 BV/BBC steam turbine; 16 500 bhp = 18·5 knots
Boiler: 1 Babcock & Wilcox
Range, miles: 5 500
Complement: 169

On charter to Indian Navy from Mogul Lines. Fitted with a helicopter landing platform aft and hangar. Automatic tensioning fitted to replenishment gear. Heavy and light jackstays. Stern fuelling as well as alongside.
Shakti launched September 1975.

Capacity: 1 280 tons diesel; 12 624 FFO; 1 495 tons avcat; 812 tons FW.

Equipment: DG fitted; NBCD fitted.

SHAKTI *1/1978*

1 SUPPORT TANKER

LOK ADHAR (ex-*Hooghly*)

Displacement, tons: 9 231

Formerly *Baqir* of Gulf Shipping Corp Ltd. Acquired in 1972.

2 + 1 SUPPORT TANKERS

PRADHAYAK **PURAN** +1

Displacement, tons: 376
Dimensions, feet (metres): 149·5 × — × 9·8 *(45·6 × — × 3)*
Main engine: 1 Diesel; 560 hp = 9 knots

Built at Rajabagan Yard, Bombay. *Puran* completed 3 June 1977 and *Pradhayak* February 1978. Third reported building.

1 SUPPORT TANKER

DESH DEEP

Measurement, tons: 11 000 deadweight

Launched in 1932.

Ex-Japanese merchant tanker taken over in 1972.

1 TUG (OCEAN)

MATANGA

Displacement, tons: 1 600 full load
Dimensions, feet (metres): 226·4 × 40·4 × — *(69 × 12·3 × —)*
Main engines: 2 GRSE/MAN diesels; 2 shafts; 3 920 bhp = 15 knots
Range, miles: 8 000 at 12 knots.

Built by Garden Reach S.Y. Laid down 11 February 1976, launched 29 October 1977. The largest tug so far built in India with a bollard pull of 40 tons and capable of towing a 20 000 ton ship at 8 knots.

1 TUG (OCEAN)

GAJ A 1751

Displacement, tons: 1 465 full load
Dimensions, feet (metres): 196·9 × 37·7 × 13·1 *(60 × 11·5 × 4)*
Main engines: 2 GRSE/MAN G7V diesels; 2 shafts; cp propellers; 2 970 bhp = 15 knots

Built by Garden Reach S.Y. in 1973-74. Bollard pull 40 tons. Fitted for salvage.

1 TUG (OCEAN)

Name	*No.*	*Builders*	*Commissioned*
HATHI	—	Taikoo Dock & Engineering Company, Hong Kong	1933

Displacement, tons: 668
Dimensions, feet (metres): 147·5 × 23·7 × 15 *(45 × 7·2 × 4·6)*
Main engines: Triple expansion; speed = 13 knots

Launched in 1932.

3 WATER CARRIERS

Displacement, tons: 200
Dimensions, feet (metres): 108·3 × — × 8 *(32 × — × 2·4)*

First laid down Rajabagan Yard 18 January 1977. Second pair built at Mazagon Docks Ltd, Bombay.

2 TORPEDO RECOVERY VESSELS

Displacement, tons: 110
Dimensions, feet (metres): 93·5 × 20 × 4·6 *(28·5 × 6·1 × 1·4)*
Main engine: 1 Kirlosker V12 diesel; 300 hp
Complement: 11

Built by Goa Shipyard. First completed early 1980, second 1981.

4 TRANSPORTS (PERSONNEL)

Built at Peoples' Engineering Yard in 1978-79.

3 DIVING TENDERS

Built at Cleback Yard in 1978-79.

1 TARGET PONTOON

Of 78 tons launched at Cleback Yard 26 September 1976. Completed March 1977.

Barq (ex-*MMS 132*), *MMS 130* and *MMS 154*, former British motor minesweepers of the "105 ft" type of wooden construction, transferred from the UK, are employed as yard craft. *MMS 1632* and *MMS 1654* of "126 ft" type are yard craft in Bombay. The former British HDMLs SPC 3110, 3112, 3117 and 3118 also used as yard craft.

COAST GUARD

Administration

Director General:
Vice-Admiral V. A. Kamath, PVSM (Retd)
Deputy Director General:
Commodore M. S. Ratra, AVSM, VSM

An Interim Coast Guard Force started operations as a part of the Indian Navy on 1 February 1977. It was constituted as an independent para-military service on 19 August 1978 with the passing of the Coast Guard Act, 1978 by the Indian Parliament.

It functions under the Ministry of Defence but with the budget met by the Department of Revenue.

Its responsibilities include:—
(a) Ensuring the safety and protection of artificial islands, offshore terminals and other installations in the Maritime Zones.
(b) Measures for the safety of life and property at sea including assistance to mariners in distress.
(c) Measures to preserve and protect the marine environment and control marine pollution.
(d) Assisting the Customs and other authorities in anti-smuggling operations.
(e) Enforcing the provisions of enactments in force in the Maritime Zones.

The Headquarters of the Coast Guard is located in Delhi with Regional Headquarters in Bombay, Cochin, Madras, Calcutta and Port Blair. Area Headquarters at Porbunder, Haldia, Vishakapatnam and Campbell Bay.
The long term plan envisages larger patrol vessels, medium range surveillance aircraft, and long range rescue helicopters. Five Britten-Norman Defender aircraft ordered in 1976.

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2 Ex-BRITISH "BLACKWOOD" CLASS (TYPE 14)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KUTHAR	31	J. Samuel White & Co Ltd, Cowes, Isle of Wight	1957	14 Oct 1958	1959
KIRPAN	32	Alex Stephen & Sons Ltd, Govan, Glasgow	1957	19 Aug 1958	July 1959

Displacement, tons: 1 180 standard; 1 456 full load
Dimensions, feet (metres): 310 × 33 × 15 (screws) *(94·5 × 10 × 4·6)*
Guns: 3—40 mm (single)
A/S weapons: 2 Limbo 3-barrelled DC mortars
Main engines: 1 set geared turbines; 15 000 shp; 1 shaft
Boilers: 2 Babcock & Wilcox
Speed, knots: 27
Oil fuel, tons: 270
Range, miles: 4 000 at 12 knots
Complement: 140

Generally similar to the British frigates of the "Blackwood" class, but slightly modified to suit Indian requirements. *Khukri* of this class was sunk in the Pakistan war on 9 December 1971.

Radar: Fitted with E Band air and surface surveillance radar.

KIRPAN *1978, Rajiv Nair*

3 TYPE P 957 (OFFSHORE PATROL VESSELS)

Displacement, tons: 1 040
Aircraft: 1 Alouette III helicopter (with hangar)
Guns: 2—40 mm; 2—7·62 mm
Main engines: 2 SEMT Pielstick 16 PA6 diesels; 13 000 hp; 2 shafts = 25 knots

A Nevesbu (Netherlands) design, being a stretched version of their 750 ton offshore patrol vessels. Ordered from Mazagon Docks in 1979 for delivery in 1981. A further eight are planned.

3 TYPE 956 (INSHORE PATROL VESSELS)

Displacement, tons: 200

Ordered from Garden Reach, Calcutta in 1979 for delivery 1981.

2 "SDB MARK 2" CLASS (FAST ATTACK CRAFT—PATROL)

T 56 **T 57**

Length, feet (metres): 203 full load
Dimensions, feet (metres): 123 × 24·6 × 5·9 *(37·5 × 7·5 × 1·8)*
Gun: 1—40/60 mm Bofors
A/S weapons: 18—Mk 7 DCs; 10—Mk 12 DCs
Main engines: 2 Paxman Deltic diesels; 2 shafts; 6 880 bhp = 29 knots
Auxiliary propulsion: 1—Kirloskar-Cummins diesel on centre shaft; 165 bhp = 4 knots
Range, miles: 1 400 at 14 knots

Built by Garden Reach S.Y., Calcutta. Indian Customs Service to purchase a number of this class—"for but not with" armament.

5 Ex-SOVIET "POLUCHAT" CLASS (INSHORE PATROL CRAFT)

PANAJI 51 **PURI** 53 **PULICAT** 55
PAMBAN 52 **PANVEL** 54

Displacement, tons: 86 standard; 91 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Gun: 1—40 mm
Main engines: 2 diesels; 2 shafts; 2 400 bhp = 20 knots
Range, miles: 460 at 17 knots
Complement: 15

One transferred to Bangladesh in 1973 but returned. Originally operated by the Home Department—now transferred to the Coast Guard.

INDONESIA

Ministerial

Minister of Defence and Security:
General Muhammad Yusuf

Administration

Chief of the Naval Staff:
Admiral Waluyo Sugito
Deputy Chief of the Naval Staff:
Rear-Admiral Mustopo
Inspector General of the Navy:
Rear-Admiral Hardjodipuro
Chief for Naval Material:
Commodore Tientarto
Chief for Naval Personnel:
Commodore Sahono Subroto
Commandant of Navy Marine Corps:
Major General Khapi Suriadiredja

Fleet Command

Commandar Military Sea Lift Command:
Rear-Admiral Suparno
Commander-in-Chief Indonesian Fleet:
Rear-Admiral Prasojo Mahdi

Diplomatic Representation

Naval Attaché in Bangkok:
Lieutenant Colonel O. Cahroma
Defence Attaché in Canberra:
Colonel Ginanjar
Defence Attaché in Delhi:
Colonel B. Sumitro
Naval Attaché in Kuala Lumpur:
Lieutenant Colonel Effendy Singgih
Defence Attaché in London:
Colonel T. Soekaton
Naval Attaché in Manila:
Lieutenant Colonel L. Sufrisman
Naval Attaché in Moscow:
Lieutenant Colonel A. Sumarsono
Naval Attaché in Singapore:
Colonel M. Arifiu
Naval Attaché in Tokyo:
Colonel Agus Subroto
Naval Attaché in Washington:
Lieutenant Colonel E. Sukarsono

Personnel

(a) 1981: 40 000 including 5 000 Marine Commando Corps and 1 000 Naval Air Arm
(b) Selective national service

Bases

Gorontalo, Kemayoran (Jakarta), Surabaya

Strength of the Fleet

Type	*Active*	*Building*
Patrol Submarines	4	2
Frigates	10	—
Fast Attack Craft—Missile	9	—
Fast Attack Craft—Torpedo	3	—
Large Patrol Craft	21	—
Coastal Patrol Craft	8	—
LSTs	9	4
Amphibious Craft	62	—
Minesweepers—Ocean	4	—
Minesweeper—Coastal	1	—
Survey Ships	4	—
Submarine Tenders	2	—
Destroyer Depot Ship	1	—
Repair Ship	1	—
Replenishment Tanker	1	—
Support Tankers	2	—
Harbour Tankers	3	—
Cable Ship	1	—
Tugs	9	—
Training Ships	2	—
		—
Customs	47	12 (40)
		—
Army	35	—
		—
Air Force	6	—
		—
Police	30+	—

Ex-Soviet Ships

Indonesia obtained 104 ships from the USSR. Of these the majority has now been deleted and all will have gone in the near future.

Future Plans

It is planned, over the next 20 years, to provide a Navy of some 25 000 seamen and 5 000 marines to man a Fleet including four fast A/S frigates, six submarines, light forces of fast attack craft—missile and—torpedo, minelayers, minesweepers, a fast HQ ship and a fast supply ship. One or two more corvettes planned.
This plan is already moving ahead with the completion of three frigates, two submarines, four fast attack craft—missile, new patrol craft and the new training ship. It is noteworthy that all the major surface ships are being fitted with missiles.
Indonesia, now having nine shipbuilding yards, is in a position to build her own smaller craft.

Naval Air Arm

6—GAF Nomad (MR)
5—HU 16B Albatros (SAR)
6—C 47
3—Alouette II helicopters
3—Alouette III helicopters
4—Bell 47G helicopters
3—Commander

Prefix to Ships' Names

KRI (Kapal di Republik Indonesia)

Mercantile Marine

Lloyd's Register of Shipping:
1 180 vessels of 1 411 688 tons gross

DELETIONS

Submarines

1974 *Alugoro, Hendradjala, Nagarangsang, Tjandrasa, Tjundmani, Trisula, Widjajadanu* (all "Whiskey" class)
1976 *Naga Banda*

Frigates

1974 *Ngurah Rai* ("Riga" class) (target 1980)
1978 *Iman Bondjol, Surapati*
1979 *Sultan Hasanudin*

Amphibious Forces

1974 3 ex-Yugoslav LCTs, *Tandjung Nusanive* (ex-US LST); 3 ex-US LCI Type

Mine Warfare Forces

1974 4 ex-Dutch CMS, 5 "R" class
1976 *Pulau Rondo* ("T 43" class), *Rau, Rindja, Rusa* ("R" class), *Pulau Alor, Pulau Anjer, Pulau Antang, Pulau Aru, Pulau Aruan, Pulau Impalasa* ("Falcon" class)
1979 *Pulau Roon, Pulau Rengat*

Light Forces

1974 2 "Jaguar" class, 25 HDMLs, 10 Motor Launches, *Palu, Tenggiri*
1975 14 "P 6" class, 18 "BK" class, *Landjuru, Lapai, Lumba Lumba, Madidihang, Tongkol, Tjutjut* ("Kronshtadt" class)
1976 *Katula, Momare* ("Kronshtadt" class), *Krapu* ("Kraljevica" class), *Katjabola, Tritusta* ("Komar" class)
1977 *Serigala* ("TNC 45" class)
1979 *Kalamisani, Pulang Geni, Surotama, Naga Pasa, Matjang Kumbang, Torani*

Auxiliaries

1974 2 Transports, 1 Salvage Vessel, 1 Tug, 37 Patrol Craft
1976 *Thamrin* ("Atrek" class), *Pangkalin Brandan, Wono Kromo* ("Uda" class)

PENNANT LIST

Note: Some changes have been made to pennant numbers. The following list includes all known changes.

Submarines

401 Cakra
402 Nanggala
410 Pasopati
412 Bramastra

Frigates

341 Samadikun
342 Martadinata
343 Monginsidi
344 Ngurah Rai
351 Jos Sudarso
357 Lambung Mangkurat
360 Nuku
361 Fatahillah
362 Malahayati
363 Nala
371 Pattimura

Light Forces

601 Kelaplintah
603 Sarpawasesa
605 Kalanada
609 Sarpamina

Light Forces

612 Guawidjaja
621 Rencong
622 Mandau
623 Badik
624 Keris
652 Beruang
654 Harimau
655 Anoa
805 Hiu
807 Cakalang
814 Pandorong
815 Sura
816 Kakap
817 Barakuda
818 Sembilang
819 Layang
820 Lemadang
821 Krapu
822 Dorang
823 Todak
841 Benteng Kalakuan
842 Benteng Waitatire
843 Benteng Silungkang
844 Kelabang
845 Kompas
846 Kala Hitam
848 Siliman
849 Sibarau
851 Samadar

Light Forces

852 Sasila
853 Sabola
854 Sadarin
855 Sawangi
856 Salmaneti

Mine Warfare Forces

701 Pulau Rani
702 Pulau Ratewo
704 Pulau Rorbas
705 Pulau Raja
708 Pulau Rapat

Amphibious Forces

501 Teluk Langsa
502 Teluk Bajur
503 Teluk Amboina
504 Teluk Kau
505 Teluk Manado
508 Teluk Tomini
509 Teluk Ratai
510 Teluk Saleh
511 Teluk Bone
595 Teluk Mentawai

Support Ships

561 Multatuli
562 Dumai
901 Ratulangi

Service Forces

906 Sungai Jerong
911 Sorong
921 Jaya Wijaya
925 Banggai
928 Rakata
931 Tansung Pandan
932 Tansung Oisina
934 Lampo Batang
935 Tambora
936 Bromo
952 Nusa Telu
960 Pakan Baru
1003 Biduk

Survey Ships

931 Burudjulasad
1002 Burdjamhal
1005 Jalanidhi
1008 Aries

FATAHILLAH and MALAHAYATI *P. D. Jones*

"CLAUD JONES" Class

"RIGA" Class

SUBMARINES

2 + 2 TYPE 209

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CAKRA	401	Howaldtswerke, Kiel	1977	10 Sep 1980	1981
NANGGALA	402	Howaldtswerke, Kiel	1977	10 Sep 1980	1982

Displacement, tons: 1 260 surfaced; 1 390 dived
Dimensions, feet (metres): 195·2 × 20·3 × 16·4 *(59·5 × 6·2 × 5)*
Torpedo tubes: 8—21 in *(533 mm)* bow with reloads
Main machinery: Diesel-electric; 4 MTU-Siemens diesel generators; 1 Siemens electric motor; 5 000 shp; 1 shaft
Speed, knots: 10 surfaced; 22 dived
Endurance: 50 days
Complement: 34

First pair ordered on 2 April 1977, second pair autumn 1980. Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal, Essen—all acting as a consortium.

Batteries: Have high capacity batteries with GRP lead-acid cells and battery cooling supplied by Wilhelm Hagen AG.

Type 209

2 Ex-SOVIET "WHISKEY" CLASS

PASOPATI 410 **BRAMASTRA** 412

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 16·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* bow, 2—16 in *(406 mm)* stern; 14 torpedoes carried or 28 mines
Main machinery: Diesel-electric drive; 2 diesels; 4 000 hp; 2 electric motors; 2 700 hp; 2 shafts
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots surfaced
Complement: 54

PASOPATI *1978, Indonesian Navy*

The four Soviet submarines of the "Whiskey" class, which arrived in Indonesia on 28 June 1962, brought the total number of this class transferred to Indonesia to 14 units, but it was reported that only six would be maintained operational, while six would be kept in reserve and two used for spare parts. Now reduced to two operational boats which have been refitted and have received new batteries from UK.

FRIGATES

Name	No.	Builders	Laid down	Launched	Commissioned
FATAHILLAH	361	Wilton Fijenoord, Schiedam, Netherlands	31 Jan 1977	22 Dec 1977	16 July 1979
MALAHAYATI	362	Wilton Fijenoord, Schiedam, Netherlands	28 July 1977	19 June 1978	end 1979
NALA	363	Wilton Fijenoord, Schiedam, Netherlands	27 Jan 1978	11 Jan 1979	mid-1980

Displacement, tons: 1 200 standard; 1 450 full load
Dimensions, feet (metres): 276 × 36·4 × 10·7 *(84 × 11·1 × 3·3)*
Missiles: SSM; 4 Exocet
Guns: 1—120 mm L/46 Bofors; 1—40 mm L/20 Bofors; 2—20 mm
A/S weapons: Bofors 2-barrelled SR 375A rocket projector for Nelli or Erika weapons; 6 Mk 32 torpedo tubes (6 spare torpedoes, Mk 44 or A244)
Main engines: CODOG; 1 Rolls-Royce Olympus gas turbine 28 000 hp; 2 MTU diesels; 6 000 hp; 2 shafts; Lips cp propellers
Speed, knots: 30
Complement: 89

Ordered August 1975. Officially rated as "Corvettes". Nevesbu design.

Countermeasures: Two Vickers Mk 4 chaff launchers and T-Mk 6 torpedo decoy outfit.

Helicopter: *Nala* is fitted with a telescopic hangar/landing deck for one helicopter; makers Machinefabriek Oldenzaal BV, Netherlands.

Radar: Air and surface surveillance: HSA DA-05.
Surface warning: Decca AC 1229.
Tracking: HSA WM-28.

NALA *3/1980, L. and L. van Ginderen*

Sonar: Van der Heem PHS 32.

Weapon control: WCS WM20.

4 Ex-US "CLAUD JONES" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
SAMADIKUN (ex-USS *John R. Perry* DE 1034)	341	Avondale Marine Ways	1 Oct 1957	29 July 1958	5 May 1959
MARTADINATA (ex-USS *Charles Berry* DE 1035)	342	American S.B. Co, Toledo, Ohio	29 Oct 1958	17 Mar 1959	25 Nov 1959
MONGINSIDI (ex-USS *Claud Jones* DE 1033)	343	Avondale Marine Ways	1 June 1957	27 May 1958	10 Feb 1959
NGURAH RAI (ex-USS *McMorris* DE 1036)	344	American S.B. Co, Toledo, Ohio	5 Nov 1958	26 May 1959	4 Mar 1960

Displacement, tons: 1 450 standard; 1 750 full load
Dimensions, feet (metres): 310 × 37 × 18 *(95 × 11·3 × 5·5)*
Guns: 1—3-in *(76 mm)*/50 (single Mk 34) (see note); 2—37 mm (twin); 2—25 mm (twin) (341-342); 2—3 in *(76 mm)* (single); 2—25 mm (twin) (343-344)
A/S weapons: 2 triple torpedo tubes (Mk 32); 2 Hedgehogs
Main engines: 4 diesels; 9 200 hp; 1 shaft
Speed, knots: 22
Complement: 175

Samadikun served as fleet flagship—relieved by *Multatuli*.

Electronics: ECM/ESM gear removed.

Gunnery: Fire control system Mk 70 for 3-in guns. Secondary armament is ex-Soviet in 341 and 342.

Radar: Search: SPS 6.
Fire control: SPS 10.
Navigation: Decca.

Sonar: SQS 29-32 series.

Transfer: *Samadikun*, 20 February 1973; *Martadinata*, 31 January 1974; *Monginsidi* and *Ngurah Rai* 16 December 1974.

MARTADINATA *1980, P. D. Jones*

3 Ex-SOVIET "RIGA" CLASS

JOS SUDARSO 351 **NUKU** 360
LAMBUNG MANGKURAT 357

Displacement, tons: 1 000 standard; 1 320 full load
Dimensions, feet (metres): 300·1 × 33·1 × 10·5 *(91·5 × 10·1 × 3·2)*
Guns: 3—3·9 in *(100 mm)* (single); 4—37 mm
A/S weapons: 4 DC projectors
Torpedo tubes: 3—21 in *(533 mm)*
Mines: Fitted with mine rails
Main engines: Geared steam turbines; 2 shafts; 20 000 shp
Boilers: 2
Speed, knots: 28
Range, miles: 2 500 at 15 knots
Complement: 175

Built 1955-57. Transferred in 1964. *Nuku* in reserve pending use as target in 1981.

Radar: Search and warning: Slim Net.
Fire control: Sun Visor A with Wasp Head director.
Navigation: Neptun.
IFF: High Pole A.

LAMBUNG MANGKURAT *1974, John Mortimer*

1 "PATTIMURA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
PATTIMURA	371	Ansaldo, Leghorn	8 Jan 1956	1 July 1956	28 Jan 1958

Displacement, tons: 950 standard; 1 200 full load
Dimensions, feet (metres): 270·2 × 34 × 9 *(82·4 × 10·4 × 2·7)*
Guns: 2—3 in *(76 mm)*/40; 4—25 mm (twins); 4—12·7 mm (twins)
A/S weapons: 2 Hedgehogs; 4 DCTs
Main engines: 3 Ansaldo-Fiat diesels; 3 shafts; 6 900 bhp
Speed, knots: 22
Range, miles: 2 400 at 18 knots
Oil fuel, tons: 100
Complement: 110

Similar to Italian "Albatros" class. Now non-operational.

PATTIMURA *1980, P. D. Jones*

LIGHT FORCES

4 PSMM Mark 5 (FAST ATTACK CRAFT—MISSILE)

RENCONG 621
MANDAU 622
BADIK 623
KERIS 624

Displacement, tons: 290 full load
Dimensions, feet (metres): 175·8 × 26·2 × 5·2 *(53·6 × 8 × 1·6)*
Missiles: SSM; 4 Exocet (single cells)
Guns: 1—57 mm L/70; 1—40 mm L/70 Bofors; 2 MGs
Main engines: 1 General Electric LM 2500 gas turbine; 2 MTU diesels; 2 shafts (cp propellers) = 41 knots (gas) 17 knots (diesels)
Range: 2 000 at 17 knots
Complement: 32

Ordered from Korea-Tacoma Masan, Republic of Korea. First pair completed 20 July 1979 and delivered October 1979. Second pair completed early 1980. Designated PSK.

Fire control: HSA.

Radar: Navigation: Decca 1226.

BADIK *1980, P. D. Jones*

5 Ex-SOVIET "KOMAR" CLASS (FAST ATTACK CRAFT—MISSILE)

KELAPLINTAH 601
SARPAWASESA 603
KALANADA 605
SARPAMINA 609
GUAWIDJAJA 612

Displacement, tons: 68 standard; 75 full load
Dimensions, feet (metres): 87·9 × 20·3 × 4·9 *(26·8 × 6·2 × 1·5)*
Missiles: SSM; 2-SS-N-2 (single cells) (See note)
Guns: 2—25 mm (1 twin)
Main engines: 4 diesels; 4 shafts; 4 800 hp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

Six were transferred to Indonesia in 1961-63, four more in September 1964 and two in 1965. Missiles probably of doubtful capability. *Guawidjaja* in reserve. All for deletion in near future.

Hardadali of this class sank early 1976 after hitting an underwater obstacle.

Radar: Square Tie.

SARPAMINA *1967*

3 "LÜRSSEN TNC-45" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
BERUANG	652	Lürssen, Vegesack	1959
HARIMAU	654	Lürssen, Vegesack	1960
ANOA	655	Lürssen, Vegesack	1959

Displacement, tons: 160 standard; 220 full load
Dimensions, feet (metres): 139·7 × 22·9 × 9·5 *(42·6 × 7 × 2·9)*
Guns: 2—40 mm (single)
Main engines: 4 Daimler-Benz (MTU) diesels; 4 shafts; 12 000 bhp = 35 knots
Complement: 39

Steel hulled. Similar to West German "Jaguar" class.

HARIMAU *Indonesia*

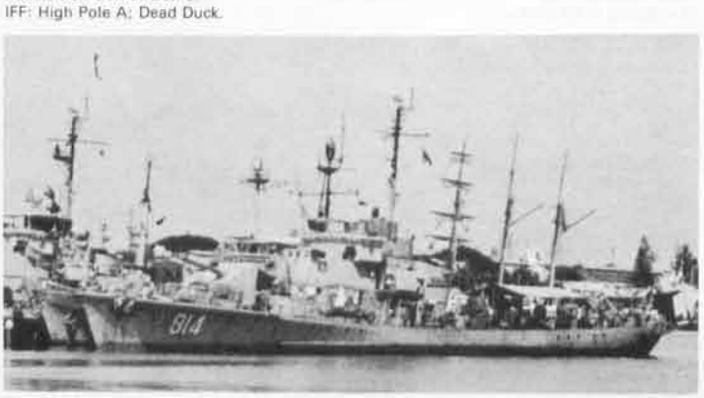
6 Ex-SOVIET "KRONSHTADT" CLASS (LARGE PATROL CRAFT)

PANDORONG 814
SURA 815
KAKAP 816
BARAKUDA 817
SEMBILANG 818
TOHOK

Displacement, tons: 310 standard; 380 full load
Dimensions, feet (metres): 170·9 × 21·5 × 6·9 *(52·1 × 6·5 × 2·1)*
Guns: 1—3·5 in *(85 mm)*; 2—37 mm; 6—12·7 mm (twins)
A/S weapons: 2 DCTs; 2 MBU 1800; 2 DC racks
Mines: 2 mine rails for 10 mines
Main engines: 3 diesels; 3 shafts; 3 300 bhp = 24 knots
Oil fuel, tons: 20
Range, miles: 1 500 at 12 knots
Complement: 40

Built in 1951-54. Transferred to the Indonesian Navy on 30 December 1958. *Kakap* in reserve.

Radar: Ball Gun or Don 2.
IFF: High Pole A; Dead Duck.



PANDORONG *1980, P. D. Jones*

2 Ex-US "PC 461" CLASS (LARGE PATROL CRAFT)

HIU (ex-USS *Malvern*, PC 580) 805
CAKALANG (ex-USS *Pierre*, PC 1141) 807

Displacement, tons: 280 standard; 335 full load
Dimensions, feet (metres): 178·8 × 23·1 × 8·5 *(54·5 × 7 × 2·6)*
Guns: 1—3 in *(76 mm)*; 4—25 mm (twin); 4—12·7 mm (twins)
A/S weapons: 1 Hedgehog; 2 DCTs; 2 DC rails
Main engines: 2 General Motors diesels; 2 shafts; 2 800 bhp = 20 knots
Oil fuel, tons: 60
Range, miles: 5 000 at 10 knots
Complement: 54 (4 officers, 50 men)

Built in 1942-43. *Cakalang* transferred from the US Navy at Pearl Harbor, Hawaii in October 1958 and *Hiu* in March 1960. Both in reserve preparatory to deletion late 1981.

Radar: Search: SPS 10.
Navigation: Decca 110.

HIU *1980, P. D. Jones*

5 Ex-YUGOSLAV "KRALJEVICA" CLASS (LARGE PATROL CRAFT)

LAYANG (ex-*PBR 515*) 819
LEMADANG (ex-*PBR 517*) 820
KRAPU (ex-*PBR 513*) 821
DORANG (ex-*PBR 514*) 822
TODAK (ex-*PBR 518*) 823

Displacement, tons: 190 standard; 245 full load
Dimensions, feet (metres): 141·4 × 20·7 × 5·7 *(43·1 × 6·3 × 1·8)*
Guns: 1—3 in *(76 mm)*; 1—40 mm; 4—20 mm (twins)
A/S weapons: Hedgehog; 2 DCTs; 2 DC racks
Main engines: 2 MAN diesels; 2 shafts; 3 300 bhp = 19 knots
Oil fuel, tons: 15
Range, miles: 1 500 at 12 knots
Complement: 49

Purchased and transferred on 27 December 1958.

Radar: Some have Decca.

DORANG *1968, Indonesian Navy*

3 "KELABANG" CLASS (LARGE PATROL CRAFT)

KELABANG 844 **KOMPAS** 845 **KALA HITAM** 846

Displacement, tons: 147
Gun: 1—40 mm/60; 4—12·7 mm MG (twins)
A/S weapons: DCs
Main engines: 2 MAN diesels = 21 knots

Built in Indonesia in 1966-70.

KALA HITAM *1968, Indonesian Navy*

2 Ex-AUSTRALIAN "ATTACK" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SILIMAN (ex-HMAS *Archer*)	848	Walkers, Australia	1968
SIBARAU (ex-HMAS *Bandolier*)	849	Walkers, Australia	1968

Displacement, tons: 146 full load
Dimensions, feet (metres): 107·5 × 20 × 7·3 *(32·8 × 6·1 × 2·2)*
Guns: 1—40 mm; 2 medium MGs
Main engines: 2 Paxman diesels; 3 500 hp; 2 shafts = 21 knots
Range, miles: 1 220 at 13 knots
Complement: 19 (3 officers, 16 men)

Transferred from RAN after refit—*Bandolier* 16 November 1973, *Archer* in 1974.

SIBARAU (old number) *1973, Graeme Andrews*

3 Ex-US "PGM 39" CLASS (LARGE PATROL CRAFT)

BENTENG WAITATIRI (ex-*PGM 56*) 841
BENTENG SILUNGKANG (ex-*PGM 55*) 842
BENTENG KALAKUAN (ex-*PGM 57*) 843

Displacement, tons: 133 full load
Dimensions, feet (metres): 100·3 × 18·6 × 6·9 *(30·6 × 5·7 × 2·1)*
Guns: 2—20 mm; 2 MGs
Main engines: 2 Mercedes-Benz MB 820 diesels; 2 050 bhp; 2 shafts = 17 knots
Complement: 15

Originally intended as Amphibious Control Craft. Now used for normal patrol duties.
All transferred January 1962.

Gunnery: Original armament four 12·7 mm machine guns (twin).

6 DE HAVILLAND "CARPENTARIA" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SAMADAR	851	Hawker-De Havilland Australia	Aug 1976
SASILA	852	Hawker-De Havilland Australia	Sep 1976
SABOLA	853	Hawker-De Havilland Australia	Oct 1976
SAWANGI	854	Hawker-De Havilland Australia	Nov 1976
SADARIN	855	Hawker-De Havilland Australia	Jan 1977
SALMANETI	856	Hawker-De Havilland Australia	Jan 1977

Displacement, tonnes: 23 full load
Dimensions, feet (metres): 51·5 × 15·7 × 4·3 *(15·7 × 4·8 × 1·3)*
Guns: 2 MGs
A/S weapons: DCs
Main engines: 2 MTU diesels; 1 360 bhp = 29 knots
Range, miles: 950 at 18 knots
Endurance: 4/5 days
Complement: 10

First delivered June 1976.

SAWANGI *1980, P. D. Jones*

2 FAIREY MARINE "SPEAR" CLASS (COASTAL PATROL CRAFT)

Dimensions, feet (metres): 29·8 × 9·2 × 2·6 *(9·1 × 2·8 × 0·8)*
Main engines: 2 diesels; 360 hp
Speed, knots: 30
Range, miles: 200 at 26 knots

Purchased in 1973-74.

AMPHIBIOUS FORCES

(Including Military Sealift Command—Kolinlamil)

8 + 4 Ex-US "LST 1-511" and "512-1152" CLASSES

Name	*No.*	*Builders*	*Commissioned*
TELUK LANGSA (ex-USS *LST 1128*)	501	Chicago Bridge and Iron Works	9 Mar 1945
TELUK BAJUR (ex-USS *LST 616*)	502	Chicago Bridge and Iron Works	29 May 1944
TELUK KAU (ex-USS *LST 652*)	504	Chicago Bridge and Iron Works	1 Jan 1945
TELUK TOMINI (ex MV; ex-USS *Bledsoe County, LST 356*)	508	Charleston NY	22 Dec 1942
TELUK RATAI (ex-Liberian *Inagua Shipper*)	509	—	—
TELUK SALEH (ex-USS *Clark County, LST 601*)	510	Chicago Bridge and Iron Works	25 Mar 1944
TELUK BONE (ex-USS *Iredell County, LST 839*)	511	American Bridge Co, Pa	6 Dec 1944
TELUK MENTAWAI	595	—	—

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 7—40 mm; 2—20 mm (501); 6—37 mm (remainder)
Main engines: General Motors diesels; 2 shafts; 1 800 bhp = 11·6 knots
Oil fuel, tons: 600
Range, miles: 7 200 at 10 knots
Cargo capacity: 2 100 tons
Complement: 119 (accommodation for 266)

Four more of this class building in Japan. Nos 502 and 508 in Military Sealift Command.

Gunnery: Older units and previously unarmed ships now fitted with ex-Soviet 37 mm guns.

Transfers: 505 in March 1960, 502, 510 and 511 in June 1961 (and by purchase 22 February 1979). 504 and 501 in July 1970.

1 JAPANESE TYPE LST

Name	*No.*	*Builders*	*Commissioned*
TELUK AMBOINA	503	Sasebo, Japan	1961

Displacement, tons: 2 200 standard; 4 200 full load
Dimensions, feet (metres): 327 × 50 × 15 *(99·7 × 15·3 × 4·6)*
Guns: 4—40 mm; 1—37 mm
Main engines: MAN diesels; 2 shafts; 3 000 bhp = 13·1 knots
Oil fuel, tons: 1 200
Range, miles: 4 000 at 13·1 knots
Complement: 88 (accommodation for 300)

Launched on 17 March 1961 and transferred in June 1961. A copy of US "LST 511" class. Military Sealift Command.

2 LCU TYPE

AMURANG **DORE**

Displacement, tons: 182 standard; 275 full load
Dimensions, feet (metres): 125·7 × 32·8 × 5·9 *(38·3 × 10 × 1·8)*
Main engines: Diesels; 420 hp = 8 knots
Complement: 17

Military Sealift Command.

13 INDONESIAN LCMs

First three completed in 1976.

25 + LCM TYPE

Possibly 25 ex-UK LCM 7.
Possibly two LCM 6.

20 + LCVP TYPE

Ex-US Craft, possibly with Indonesian Army Transportation Corps (See end of section).

KUPANG **DILI**

Displacement, tons: 200
Dimensions, feet (metres): 99·4 × 32·1 × — *(30·3 × 9·8 × —)*
Main engines: 2 diesels
Range, miles: 700 at 11 knots

LCU type built at Naval Training Centre, Surabaya. Military Sealift Command.

MINE WARFARE FORCES

4 Ex-SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

PULAU RANI 701 — **PULAU RORBAS** 704
PULAU RATEWO 702 — **PULAU RAJA** 705

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)*
Guns: 4—37 mm (twins); 4—12·7 mm (twins)
A/S weapons: 2 DCTs
Main engines: 2 diesels; 2 shafts; 2 200 bhp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 60

Transferred to Indonesia by the USSR, four in 1962 and two in 1964. Two now deleted.

Radar: Decca 110 in some.

PULAU RANI *1980, P. D. Jones*

1 "R" CLASS (MINESWEEPER—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
PULAU RAPAT	708	Abeking & Rasmussen, Lemwerder	—

Displacement, tons: 139·4 standard
Dimensions, feet (metres): 129 × 18·7 × 5 *(39·3 × 5·7 × 1·5)*
Guns: 1—40 mm; 2—20 mm
Main engines: 2 MAN 12-cyl diesels; 2 800 bhp = 24·6 knots
Complement: 26

Originally a class of ten. Has a framework of light metal covered with wood. In reserve.

"R" Class *Indonesian Navy*

SURVEY SHIPS

Name	*No.*	*Builders*	*Commissioned*
BURUDJULASAD	1006	Schlichting, Travemunde	1967

Displacement, tons: 2 150 full load
Dimensions, feet (metres): 269·5 × 37·4 × 11·5 *(82·2 × 11·4 × 3·5)*
Main engines: 4 MAN diesels; 2 shafts; 6 850 bhp = 19·1 knots
Complement: 113

Burudjulasad was launched in 1966; her equipment includes laboratories for oceanic and meteorological research, a cartographic room, and a helicopter. Can accommodate 28 scientists.

BURUDJULASAD *1978, Indonesian Navy*

Name	*No.*	*Builders*	*Commissioned*
BURDJAMHAL	1002	Scheepswerf De Waal, Zaltbommel	6 July 1953

Displacement, tons: 1 500 full load
Dimensions, feet (metres): 211·7 × 33·2 × 10 *(64·6 × 10·1 × 3·3)*
Main engines: 2 Werkspoor diesels; 1 160 bhp = 10 knots
Complement: 90

Launched on 6 September 1952.

JALANIDHI 1005

Displacement, tons: 985
Dimensions, feet (metres): 159·1 × 31·2 × 14·1 *(48·5 × 9·5 × 4·3)*
Speed, knots: 11·5
Complement: 58

Launched in 1962 by Sasebo Heavy Industries, Japan. Oceanographic research ship with hydromet facilities.

ARIES 1008

Displacement, tons: 56
Dimensions, feet (metres): 69·9 × 12·5 × 6·6 *(21·3 × 3·8 × 2)*
Main engine: 1 diesel; 300 bhp = 12 knots
Complement: 13

Launched 1960. Ex-Soviet "PO 2" class. Transferred 1964.

COMMAND AND SUPPORT SHIPS

Note: Tenders have been invited for a 10 000 ton Fleet Support Ship.

1 Ex-SOVIET "DON" CLASS (SUBMARINE TENDER)

RATULANGI (ex-*Kartasov*) 901

Displacement, tons: 6 730 standard; 9 000 full load
Dimensions, feet (metres): 449·4 × 55·1 × 22·3 *(137 × 16·8 × 6·8)*
Guns: 4—3·9 in *(100 mm)*; 8—57 mm; 8—25 mm (twins)
Main engines: 4 diesels; 14 000 bhp = 21 knots
Range, miles: 10 000 at 12 knots
Complement: 300

A submarine support ship, escort vessel and maintenance tender transferred from the USSR to Indonesia in 1962, arriving in Indonesia in July. Fitted with Slim Net search and warning radar and fire control radar.

RATULANGI *1968, Indonesian Navy*

1 SUBMARINE TENDER

Name	*No.*	*Builders*	*Commissioned*
MULTATULI	561	Ishikawajima-Harima Heavy Industries Co Ltd	Aug 1961

Displacement, tons: 3 220 standard; 4 500 full load
Dimensions, feet (metres): 365·3 × 52·5 × 23 *(111·4 × 16 × 7)*
Aircraft: 1 Alouette II helicopter
Guns: 8—37 mm (2 twin, 4 single); 4—MGs
Main engines: Burmeister & Wain diesel; 5 500 bhp = 18·5 knots
Oil fuel, tons: 1 400
Range, miles: 6 000 at 16 knots cruising speed
Complement: 134

Built as a submarine tender. Launched on 15 May 1961. Delivered to Indonesia August 1961. Capacity for replenishment at sea (fuel oil, fresh water, provisions, ammunition, naval stores and personnel). Medical and hospital facilities. Equipment for supplying compressed air, electric power and distilled water to submarines. Air-conditioning and mechanical ventilation arrangements for all living and working quarters. Now used as fleet flagship.

Reconstruction: Original after 76 mm mounting replaced by helicopter deck.

MULTATULI *1980, P. D. Jones*

SERVICE FORCES

1 Ex-US "ACHELOUS" CLASS (REPAIR SHIP)

JAYA WIJAYA (ex-USS *Askari* 9109, ex-*ARL 30*, ex-*LST 1131*) 921

Displacement, tons: 1 625 light; 4 100 full load
Dimensions, feet (metres): 328 × 50 × 11 *(100 × 15·3 × 3·4)*
Guns: 8—40 mm (2 quad)
Main engines: 2 General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Complement: 280

Built by Chicago Bridge and Iron Co. Commissioned 19 March 1945. This ship was in reserve from 1956-66. She was recommissioned and reached Viet-Nam in 1967 to support River Assault Flotilla One. She was used by the US Navy and Vietnamese Navy working up the Mekong in support of the Cambodian operations in May 1970. Transferred on lease to Indonesia at Guam on 31 August 1971 and purchased 22 February 1979.

JAYA WIJAYA *1978, Indonesian Navy*

1 Ex-US "SHENANDOAH" CLASS (DESTROYER DEPOT SHIP)

DUMAI (ex-USS *Tidewater* AD31) 562

Displacement, tons: 8 165 standard; 14 700 full load
Dimensions, feet (metres): 492 × 69·5 × 27·2 *(150·1 × 21·2 × 8·3)*
Main engines: Geared turbines; 1 shaft; 8 500 shp = 18·4 knots
Boilers: 2 Babcock & Wilcox
Complement: 778

Built in Charleston Navy Yard. Commissioned in 1945. Transferred on loan February 1971 as destroyer depot ship, purchased 14 March 1980. No longer operational with most of equipment removed and used as accommodation ship for oil-field personnel.

DUMAI *1978, Indonesian Navy*

1 REPLENISHMENT TANKER

SORONG 911

Measurement, tons: 5 100 deadweight
Dimensions, feet (metres): 367·4 × 50·5 × 21·6 *(112 × 15·4 × 6·6)*
Guns: 8—12·7 mm (twins)
Speed, knots: 15 (10 economical)

Built in Yugoslavia in 1965. Has underway replenishment facilities. Capacity 3 000 tons fuel and 300 tons water.

Radar: Navigation: Decca.

SORONG *1980, P. D. Jones*

1 Ex-SOVIET "UDA" CLASS (SUPPORT TANKER)

BALIKPAPAN 951

Displacement, tons: 5 500 standard; 7 200 full load
Dimensions, feet (metres): 400·3 × 51·8 × 20·3 *(122·1 × 15·8 × 6·2)*
Guns: 6—25 mm (twins)
Main engines: 2 diesels; 2 shafts; 8 000 bhp

Survivor of three transferred in 1962. Now a hulk.

1 SUPPORT TANKER

SUNGAI JERONG 906

Displacement, tons: 1 300 deadweight
Guns: 4—14·5 mm (twins)
Main engine: Diesel; 1 shaft = 13 knots

Soviet built. Transferred 1964.

1 Ex-SOVIET "KHOBI" CLASS (HARBOUR TANKER)

PAKAN BARU 909

Displacement, tons: 1 500 full load
Dimensions, feet (metres): 207 × 32·8 × 12·5 *(63·1 × 10 × 3·8)*
Main engines: 2 diesels; 2 shafts; 1 600 bhp = 11 knots

Decca navigation radar.

2 HARBOUR TANKERS

TARAKAN **BULA**

Displacement, tons: 1 340 full load
Dimensions, feet (metres): 352 × 37·7 × 14·8 *(107·4 × 11·5 × 4·5)*
Main engines: Diesels; 1 shaft; 1 500 bhp = 13 knots

MISCELLANEOUS

5 "TISZA" CLASS (AKL)

KARIMATA, KARIMUDJAWA, MENTAWAI, NATUNA, TALAUD

Measurement, tons: 4 825 deadweight; 2 741 gross; 1 507 net
Dimensions, feet (metres): 362 × 49 × — *(110·4 × 14·9 × —)*
Main engine: One 5-cyl MAN diesel; 3 600 bhp = 14 knots

Ex-West German ships sold to Hungary and transferred 1962 by the USSR. Built in 1952. Military Sealift Command.

2 TRANSPORTS

TANSUNG PANDAN (ex-*Nya Dhien*) 931
TANSUNG OISINA (ex-*Gununjati*) 932

8 000 grt passenger liners purchased in 1978.

1 TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
DEWARUTJI	—	H. C. Stülcken & Sohn, Hamburg	9 July 1953

Displacement, tons: 810 standard; 1 500 full load
Dimensions, feet (metres): 136·2 pp; 191·2 oa × 31·2 × 13·9 *(41·5; 58·3 × 9·5 × 4·2)*
Main engines: MAN diesels; 600 bhp = 10·5 knots
Complement: 110 (32 + 78 midshipmen)

Barquentine of steel construction. Sail area, 1 305 sq yards *(1 091 sq metres)*. Launched on 24 January 1953.

1 TRAINING SHIP

Displacement, tons: 1 850 full load
Dimensions, feet (metres): 317·3 × 36·7 × 11·8 *(96·7 × 11·2 × 3·6)*
Aircraft: Probably 1 helicopter
Missiles: SSM; 4 Exocet (single cells)
Guns: 1—57 mm L/70; 2—20 mm
A/S weapons: 2 tubes for SUT torpedoes; 1—GM 101/41 A/S mortar
Main engines: CODOG; 1 Olympus gas turbine; 22 300 hp;
2 MTU16V956/T1391 diesels; 7 500 hp; 2 shafts
Speed, knots: 27 (gas); 20 (diesels)
Range, miles: 4 000 cruising
Complement: 93+100 trainees

Ordered 14 March 1978 from Yugoslavia where the hull was built and engines fitted. Armament and electronics to be fitted in the Netherlands and Indonesia. Completion in 1980. In peacetime to be used for training and troop transport. War roles include escort, ASW and troop transport.

1 CABLE SHIP

Name	*No.*	*Builders*	*Commissioned*
BIDUK	1003	J & K Smit, Kinderijk	30 July 1952

Displacement, tons: 1 250 standard
Dimensions, feet (metres): 213·2 × 39·5 × 11·5 *(65 × 12 × 3·5)*
Main engine: 1 triple expansion engine; 1 600 ihp = 12 knots
Complement: 66

Cable layer, lighthouse tender, and multi-purpose naval auxiliary. Launched on 30 October 1951.

4 ROTORK CRAFT

All STW 412 Type.

TENDERS

2 SMALL TRANSPORTS

BANGGAI (ex-*Biscaya*) 925
NUSA TELU (ex-*Casablanca*) 952

Of 750 tons.

1 Ex-SOVIET "PODZHARNY" CLASS

Firefloat.

2 "105 ft" WATER BOATS

1 Ex-SOVIET "CHAYKA" CLASS

Patrol Launch.

4 "35 ft" PATROL LAUNCHES

FLOATING DOCKS

There are three large floating docks in Surabaya which are used for naval purposes.

TUGS

1 Ex-US "CHEROKEE" CLASS

RAKATA (ex-USS *Menominee*, ATF 73) 922

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Guns: 1—3 in *(76 mm)*; 4—12·7 mm (twins)
Main engines: 4 diesels with electric drive; 3 000 bhp = 15 knots
Complement: 75

Launched on 14 February 1942. Transferred at San Diego in March 1961. Civilian manned.

1 Ex-SOVIET "OKHTENSKY" CLASS

TAMRAU (ex-*Maraim*) (Army)

Displacement, tons: 835
Dimensions, feet (metres): 143 × 34 × 15 *(43·6 × 10·4 × 4·6)*
Guns: 1—3 in *(76 mm)*; 2—20 mm
Main engines: 2 BM diesels; 2 electric motors; 2 shafts; 1 875 bhp = 14 knots
Oil fuel, tons: 187
Complement: 34

Ocean tug.

Name	*No.*	*Builders*	*Commissioned*
LAMPO BATANG	934	Japan	Nov 1961

Displacement, tons: 250
Dimensions, feet (metres): 92·3 × 23·2 × 11·3 *(28·2 × 7·1 × 3·4)*
Main engines: 2 diesels; 1 200 bhp = 11 knots
Oil fuel, tons: 18
Range, miles: 1 000 at 11 knots
Complement: 43

Ocean tug. Launched in April 1961.

Name	*No.*	*Builders*	*Commissioned*
TAMBORA (Army)	935	Japan	June1961
BROMO	936	Japan	Aug 1961

Displacement, tons: 150
Dimensions, feet (metres): 79 × 21·7 × 9·7 *(24·1 × 6·6 × 3)*
Main engines: 2 MAN diesels; 2 shafts; 600 bhp = 10·5 knots
Oil fuel, tons: 9
Range, miles: 690 at 10·5 knots
Complement: 15

Harbour tugs.

2 Ex-SOVIET "TUGUR" CLASS

DEMPO **MUTIS**

Harbour tugs.

2 Ex-SOVIET "SITHOLE" CLASS

Harbour tugs.

CUSTOMS PATROL CRAFT

A very large force of which the following are examples.

17 COASTAL PATROL CRAFT

BC 1001-1010 **BC 3001-3007**

Displacement, tons: 55 ("1001" class); 62 ("3001" class)
Dimensions, feet (metres): 91·8 × 17 × 5·3 *(28 × 5·2 × 1·6)*
Gun: 1—20 mm in ("BC 3001" class); 1 MG in ("BC 1001" class)
Main engines: 2 MTU 12V 331 TC 81; 2 700 hp = 34 knots
Range, miles: 750 at 15 knots
Complement: 18

Built by Chantiers Navals de l'Esterel.
BC 1001-3 commissioned April, June and November 1975, BC 3001-2 and BC 1004-6 in 1979, BC 3003-3005 and 1007-9 in 1980, BC 3006-7 and BC 1010 in 1981.

BC 1002 *1976, Ch. N de l'Esterel*

30 + 12 + (40) LÜRSSEN INDONESIA 28 TYPE

BT 401 BT 502 +22 (1960-2 batch), BC 4001-3, BC 5001-3

Displacement, tons: 60
Dimensions, feet (metres): 91·8 × 17·7 × 4·3 *(28 × 5·4 × 1·3)*
Main engines: 2 diesels; 2 shafts; 2 700 bhp = 31 knots (1960-2 batch); 2 Deutz diesels (4000 series); 2 MTU diesels (5000 series)
Range, miles: 600 at 26 knots; 1 400 at 13 knots
Complement: 14

First batch built in 1960-62. The next six shipped out July-August 1980. The 4000 series is the long-range version, the 5000 series the medium-range. A further twelve under construction in B.S.C. Boatyard NV, Belgium with another twelve to be built in Indonesia plus a further 28 planned for Indonesian construction (all under Lürssen licence).

BC 5001 *1980, P. D. Jones*

MARITIME SECURITY AGENCY

Established in 1978 to control the 200 mile EEZ and to maintain navigational aids. Two buoy tenders ordered from Japan in 1978.

6 "PAT" CLASS

PAT 01 PAT 02 PAT 03 PAT 04 PAT 05 PAT 06

Dimensions, feet (metres): 100 × 17 × 6 *(30·5 × 5·2 × 1·8)*
Main engines: 2 Caterpillar diesels; 340 bhp

ARMY CRAFT

ADRI operate fourteen 6—8000 grt transports and one ex-US LST in addition to ships shown under "Tugs" above. Twenty 300 ton LCUs (ADRI 31-50) built at Tanjong Priok SY 1978-80.

AIR FORCE CRAFT

AURI operates six 600 ton cargo ships (all with bow doors).

POLICE CRAFT

The police operate a number of craft of varying sizes including 14 "Bango" class of 194 tons.

15 DKN TYPE

Name	*No.*	*Builders*	*Commissioned*
—	DKN 901	Lürssen, Vegesack	1958
—	DKN 902	Lürssen, Vegesack	1958
—	DKN 903	Abeking & Rasmussen, Lemwerder	1958
—	DKN 904	Lürssen, Vegesack	1959
—	DKN 905	Abeking & Rasmussen, Lemwerder	1959
—	DKN 907-916	Italy	1960

Displacement, tons: 140
Dimensions, feet (metres): 128 × 19 × 5·2 *(39 × 5·8 × 1·6)*
Guns: 4—20 mm
Main engines: Maybach diesels; 2 shafts; 3 000 bhp = 24·5 knots

In addition are DKN 504-13.

TRANSPORT MINISTRY

Four 37·5 m SAR craft ordered in West Germany in 1980. To be civilian manned.

IRAN

General

With the cancellation of foreign orders in 1979 the rapid material advance of this navy was halted. What ships there are are suffering from two major problems—lack of maintenance and lack of spares. The UK/US maintenance teams have departed and a navy which has never kept very much in the way of spares now has no means of obtaining them. As a result several ships are laid up.
In the past the training of semi-illiterate conscripts was a major problem. Now, without foreign help, this dilemma must be even greater. With poor morale following the general instability of affairs the ships on the following pages cannot be considered as an efficient fighting fleet.

Headquarters' Appointment

Commander-in-Chief Iranian Navy:
Rear-Admiral Ahmad Madani

Personnel

(a) 1981: 20 000 officers and men
(b) 2 years' national service

Bases

Persian Gulf
Bandar Abbas (MHQ)
Booshehr
Kharg Island
Khorramshar (Light Forces)
Indian Ocean
Chah Bahar (under construction)
Caspian Sea
Bandar—Pahlavi (Training)

Naval Air

7 Sikorsky SH-3D (Sea King) (11 on order)
7 Bell AB-212
2 Lockheed P-3C Orions (Maritime Patrol)
4 Fokker F-27 Mk 400 M (Transport)
4 Aero Commanders (Flag officers)
6 RH.53D helicopters (3 on order)
4 Falcon F20

Prefix to Ships' Names

IS

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Destroyers	3	—
Frigates	4	—
Corvettes	4	—
Fast Attack Craft (Missile)	9	(3)
Large Patrol Craft	7	—
Coastal Patrol Craft	40	(+750)
Hovercraft	14	—
Landing Ships (L)	2	2
Landing Craft (U)	1	—
Minesweepers—Coastal	3	—
Minesweepers—Inshore	2	—
Replenishment Tanker	1	—
Supply Ships	2	—
Repair Ship	1	—
Harbour Tanker	1	—
Water Boats	3	—
Tugs	3	—
Yachts	2	—
Floating Dock	1	—
Survey Craft	4	—
Customs Craft	2	—
Coast Guard (Coastal Patrol Craft)	26	—

Mercantile Marine

Lloyd's Register of Shipping:
229 vessels of 1 283 629 tons

DELETIONS

Note: As it is impossible to verify claims of sinkings made in the 1980-81 Iran-Iraq war no deletions have been made. It is reliably reported that at least one "Kaman" class has been sunk.

Mine Warfare Forces

1974 *Shahbaz* (ex-US *MSC*) after collision damage

Service Forces

1974 *Sohrab* (ex-US *ARL 36*) sunk as A/S target
1980 *Queshm*

Coast Guard

1975 *Gohar, Shahpar, Shahram* (to Sudan)

PENNANT LIST

Destroyers

51 Artemiz
61 Babr
62 Palang

Frigates

71 Saam
72 Zaal
73 Rostam
74 Faramarz

Corvettes

81 Bayandor
82 Naghdi

Corvettes

83 Milanian
84 Khanamuie

Light Forces

01-08 "Winchester" class hovercraft
101-106 "Wellington" class hovercraft
201 Kaivan
202 Tiran
203 Mehran
204 Mahan
211 Parvin
212 Bahram
213 Nahid
P 221 Kaman
P 222 Zoubin
P 223 Khadang

Light Forces

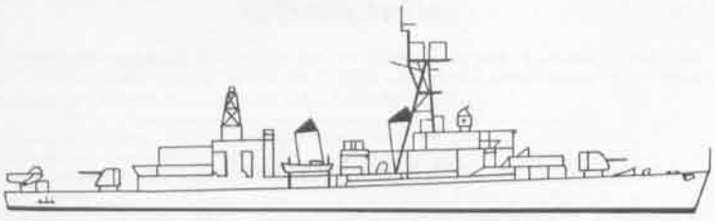
P 224 Peykan
P 225 Joshan
P 226 Falakhon
P 227 Shamshir
P 228 Gorz
P 229 Gardouneh
P 230 Khanjar
P 231 Neyzeh
P 232 Tabarzin

Mine Warfare Forces

301 Shahrokh
302 Simorgh
303 Karkas
311 Harischi
312 Riazi

Service and Auxiliary Forces

45 Bahmanshir
401 Hormuz
402 Lengeh
421 Bandar Abbas
422 Booshehr
431 Kharg
441 Chahbahar
451 Bahmanshir
511 Hengam
512 Larak
513 Lavan
514 Tonb



BABR and PALANG

ARTEMIZ

"SAAM" Class

"PF 103" Class

DESTROYERS

Originally, in 1974, six "Modified Spruance" class (details in 1979-80 edition) were ordered from Litton Industries, USA. In June 1976 two of these were cancelled and in February 1979 two more were cancelled. On 31 March 1979 the final pair was cancelled and the hulls were taken over by the US Navy as "Kidd" class.

1 Ex-BRITISH "BATTLE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ARTEMIZ (ex-HMS *Sluys*, D 60)	51	Cammell Laird & Co Ltd, Birkenhead	24 Nov 1943	28 Feb 1945	30 Sep 1946

Displacement, tons: 2 325 standard; 3 360 full load
Dimensions, feet (metres): 379 × 40·3 × 17·5 (screws) *(115·5 × 12·3 × 5·3)*
Missiles: SSM: Standard (8 with quad launcher); SAM: Seacat; (est 16 with quad launcher)
Guns: 4—4·5 in *(115 mm)* (twin, fwd); 2—40 mm/60 (single)
A/S weapons: 1 Squid 3-barrelled DC mortar
Main engines: Parsons geared turbines; 2 shafts; 50 000 shp
Boilers: 2 Admiralty 3-drum type
Speed, knots: 31
Oil fuel, tons: 680
Range, miles: 3 000 at 20 knots
Complement: 270

Transferred to Iran at Southampton on 26 January 1967, and handed over to the Imperial Iranian Navy after a three-year modernisation refit by the Vosper Thornycroft Group.

Radar: Search: Plessey AWS 1.
Air surveillance with on-mounted IFF.
Fire control: Contraves Sea-Hunter.
Radar intercept: Decca RDL 1.
Racal DF equipment.

Refit: At Cape Town 1975-76.

ARTEMIZ *1978, Chris Gee*

2 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BABR (ex-USS *Zellers*, DD 777)	61	Todd Pacific Shipyards	24 Dec 1943	19 July 1944	25 Oct 1944
PALANG (ex-USS *Stormes*, DD 780)	62	Todd Pacific Shipyards	15 Apr 1944	4 Nov 1944	27 Jan 1945

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·4 × 5·8)*
Aircraft: 1 A/S helicopter
Missiles: SAM: Standard (8 with 4 launchers)
Guns: 4—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 2 fixed Hedgehogs; 2 triple torpedo launchers (Mk 32)
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 34
Complement: 274 (14 officers, 260 ratings)

Two "FRAM II" conversion destroyers of the "Allen M. Sumner" class nominally transferred to Iran from the US Navy in March 1971 for delivery in 1972. Both in reserve in 1980 due to lack of spare parts.

Conversion: Both ships received a full refit as well as conversion at Philadelphia NSY before sailing for Iran. This included a much-improved air-conditioning layout, the removal of B gun-mount with its magazine, altered accommodation, the fitting of a Canadian telescopic hangar, the siting of the four Standard missile launchers athwartships beside the new torpedo stowage between the funnels, the rigging of VDS and fitting of Hedgehogs in B position.

Electronics: Extensive intercept and jamming (ULQ/6) arrays fitted.

Names: *Babr* (Tiger), *Palang* (Leopard).

BABR *1978, Imperial Iranian Navy*

Radar: Search: SPS 10
Air-surveillance: SPS 37 with on-mounted IFF.
Gun fire control system Mk 37 with radar Mk 25 on director.
Navigational: One on bridge.

Sonar: SQS 29 series; VDS *(Babr)*.

Spares: USS *Gainard* (DD 706) was to have been taken over in March 1971, but, being beyond repair, was replaced by USS *Stormes* (DD 780). Ex-USS *Kenneth D. Bailey* (DD 713) ("Gearing" class) purchased 13 January 1975 and ex-USS *Bordelon* (DD 881) on 1 February 1977 for spares.

FRIGATES

4 "SAAM" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
SAAM	71	Vosper Thornycroft, Woolston	22 May 1967	25 July 1968	20 May 1971
ZAAL	72	Vickers, Barrow	3 Mar 1968	4 Mar 1969	1 Mar 1971
ROSTAM	73	Vickers, Newcastle & Barrow	10 Dec 1967	4 Mar 1969	June 1972
FARAMARZ	74	Vosper Thornycroft, Woolston	25 July 1968	30 July 1969	28 Feb 1972

Displacement, tons: 1 110 standard; 1 400 full load
Dimensions, feet (metres): 310 × 36·3 × 14 (screws) *(94·4 × 11·1 × 4·3)*
Missiles: SSM: 5 Sea Killer (quin launcher); SAM: Seacat (est 9, triple launcher)
Guns: 1—4·5 in *(115 mm)*/55 (Mk 8)
2—35 mm/90 Oerlikon (1 twin)
A/S weapons: 1 Limbo 3-barrelled DC mortar
Main engines: 2 Rolls-Royce Olympus gas turbines; 46 000 shp; 2 Paxman 16-cyl Ventura diesels; 3 800 shp; 2 shafts; cp propellers
Speed, knots: 39
Range, miles: 3 200 at 17 knots
Complement: 125 (accommodation for 146)

ROSTAM — *1978, Chris Gee*

It was announced on 25 August 1966 that Vosper Ltd, Portsmouth had received an order for four vessels for the Iranian Navy, two to be built by Vickers. Air-conditioned throughout. Fitted with Vosper stabilisers. *Rostam* was towed to Barrow for completion.

Radar: Air surveillance Plessey AWS 1 with on-mounted IFF. Two Contraves Sea Hunter systems for control of 35 mm, Sea Killers and Seacats. Decca RDL 1 passive DF equipment.

Refit: *Saam* and *Zaal* taken in hand by HM Dockyard Devonport July/August 1975 for major refit including replacement of Mk 5 4·5-in gun by Mk 8. Completed 1977.

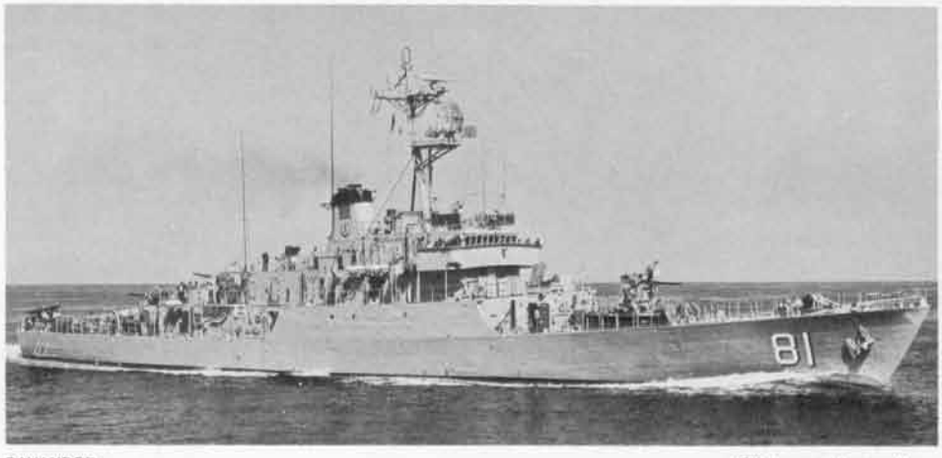
Sonar: Types 170 and 174.

CORVETTES

4 Ex-US "PF 103" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BAYANDOR (ex-US *PF 103*)	81	Levingstone Shipbuilding Co, Orange, Texas	20 Aug 1962	7 July 1963	18 May 1964
NAGHDI (ex-US *PF 104*)	82	Levingstone Shipbuilding Co, Orange, Texas	12 Sep 1962	10 Oct 1963	22 July 1964
MILANIAN (ex-US *PF 105*)	83	Levingstone Shipbuilding Co, Orange, Texas	1 May 1967	4 Jan 1968	13 Feb 1969
KAHNAMUIE (ex-US *PF 106*)	84	Levingstone Shipbuilding Co, Orange, Texas	12 June 1967	4 Apr 1968	13 Feb 1969

Displacement, tons: 900 standard; 1 135 full load
Dimensions, feet (metres): 275 × 33 × 10 *(83·8 × 10 × 3)*
Guns: 2—3 in *(76 mm)*/50 (single); 2—40 mm/60 (twin); 2—23 mm (twin)
A/S weapons: 4 DCTs; 2 DC racks
Main engines: F-M diesels; 2 shafts; 6 000 bhp
Speed, knots: 20
Complement: 140



BAYANDOR — *1978, Imperial Iranian Navy*

Built as two pairs, five years apart. Transferred from the USA to Iran under the Mutual Assistance programme in 1964 *(Bayandor* and *Naghdi)* and 1969 *(Kahnamuie* and *Milanian)*.

Conversion: Mid-life conversion planned to include 76 mm OTO Melara guns.

Gunnery: The 23 mm guns were purchased from the Soviet army and replace the Hedgehog.

Radar: Search: SPS 6.
Navigation: Raytheon.
Fire control: SPG 34 on forward 76 mm (Mk 33) mount. Mk 63 for 76 mm. Mk 51 for 40 mm.

LIGHT FORCES

12 "COMBATTANTE II" ("KAMAN") CLASS
(FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
KAMAN	P 221	Construction de Mécanique, Normandie	12 Aug 1977
ZOUBIN	P 222	Construction de Mécanique, Normandie	12 Sep 1977
KHADANG	P 223	Construction de Mécanique, Normandie	15 Mar 1978
PEYKAN	P 224	Construction de Mécanique, Normandie	31 Mar 1978
JOSHAN	P 225	Construction de Mécanique, Normandie	23 Mar 1978
FALAKHON	P 226	Construction de Mécanique, Normandie	31 Mar 1978
SHAMSHIR	P 227	Construction de Mécanique, Normandie	31 Mar 1978
GORZ	P 228	Construction de Mécanique, Normandie	22 Aug 1978
GARDOUNEH	P 229	Construction de Mécanique, Normandie	11 Sep 1978
KHANJAR	P 230	Construction de Mécanique, Normandie	—
NEYZEH	P 231	Construction de Mécanique, Normandie	—
TABARZIN	P 232	Construction de Mécanique, Normandie	—

Displacement, tons: 234 standard; 255 full load
Dimensions, feet (metres): 154·2 × 23·3 × 8·2 *(47 × 7·1 × 2·5)*
Missiles: SSM; 4 Harpoon (single cells) (see *Missiles* note)
Guns: 1—76 mm/62 (single Compact); 1—40 mm/70 Bofors
Main engines: 4 MTU 16V538 TB91 diesels; 4 shafts; 14 400 bhp = 34 knots
Oil fuel, tons: 41
Range, miles: 2 000 at 15 knots
Complement: 42

Ordered in February 1974. For completion by April 1979. *Kaman* laid down 5 February 1975, launched 8 January 1976; *Zoubin* laid down 4 April 1975, launched 31 March 1976; *Khadang* laid down 20 June 1975, launched 15 July 1976; *Peykan* laid down 15 October 1975, launched 12 October 1976. *Joshan* laid down 5 January 1976, launched 21 February 1977; *Falakhon* laid down 15 March 1976, launched 2 June 1977; *Shamshir* laid down 15 May 1976; *Gorz* laid down 5 August 1976; *Gardouneh* laid down 18 October 1976; *Khanjar* laid down 17 January 1977; *Neyzeh* laid down 12 April 1977; *Tabarzin* laid down 24 June 1977.
The last three boats have been embargoed in France.

GORZ — *5/1978, C. and S. Taylor*

Missiles: As the Iranian navy obtained only nine Harpoons this is an indication of capacity rather than capability.

Radar: Tactical and fire control: WM 28 (Hollandse Signaalapparaten).

3 IMPROVED "PGM-71" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PARVIN (ex-US *PGM 103*)	211	Peterson Builders Inc	1967
BAHRAM (ex-US *PGM 112*)	212	Peterson Builders Inc	1969
NAHID (ex-US *PGM 122*)	213	Peterson Builders Inc	1970

Displacement, tons: 105 standard; 146 full load
Dimensions, feet (metres): 100 × 22 × 10 *(30·5 × 6·7 × 3·1)*
Guns: 1—40 mm; 2—20 mm; 2—5 MGs
Main engines: 8 General Motors diesels; 2 000 bhp = 15 knots

PARVIN (original number) *1971*

4 US COAST GUARD "CAPE" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
KAIVAN	201	USA	14 Jan 1956
TIRAN	202	US Coast Guard, Curtis Bay, Maryland	1957
MEHRAN	203	USA	1959
MAHAN	204	USA	1959

Displacement, tons: 85 standard; 107 full load
Dimensions, feet (metres): 95 × 20·2 × 6·8 *(28·9 × 6·2 × 2)*
Gun: 1—40 mm
A/S weapons: 8-barrelled 7·2 in projector; 8—300 lb depth charges
Main engines: 4 Cummins diesels; 2 shafts; 2 200 bhp = 20 knots
Range, miles: 1 500 cruising
Complement: 15

MAHAN (old pennant number) *1975, Imperial Iranian Navy*

50 US "65 ft Mk III" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 28·6
Dimensions, feet (metres): 64·9 × 18·4 × 6·6 *(19·8 × 5·6 × 2)*
Guns: 3—20 mm; 1—12·7 mm
Main engines: 3 General Motors 8V71-TI diesels; 3 shafts; 2 050 hp = 30 knots
Range, miles: 500 at 30 knots
Complement: 5

Twenty ordered from Peterson, USA in 1973 with a further order in 1976. There are 20 listed under Coast Guard on later page.

30 US "50 ft Mk II" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 22
Dimensions, feet (metres): 50·2 × 15·7 × 6·2 *(15·3 × 4·8 × 1·9)*
Guns: 4—12·7 mm (twins)
Main engines: 2 Detroit 8V71 diesels; 2 shafts; 850 hp = 28 knots
Complement: 6

Twenty ordered from Peterson, USA in 1976-77, the remainder from Arvadan Maritime Co, Abadan. Aluminium hulls.

"50 ft Mk II" Class *1979*

40 BERTRAM ENFORCER TYPE

Harbour patrol craft of 31 ft and 20 ft.

6 "WELLINGTON" (BH.7) CLASS (HOVERCRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	101	British Hovercraft Corporation	Nov 1970
—	102	British Hovercraft Corporation	Mar 1971
—	103	British Hovercraft Corporation	mid-1974
—	104	British Hovercraft Corporation	mid-1974
—	105	British Hovercraft Corporation	late 1974
—	106	British Hovercraft Corporation	early 1975

Weight, tons: 50 max; 33 empty
Dimensions, feet (metres): 76 × 45 ×42 *(23·2 × 13·7 × 12·8)*
Missiles: SSMs in last four (see note)
Guns: 2 Browning MGs
Main engine: 1 Proteus 15 M:541 gas turbine = 60 knots
Oil fuel, tons: 10

First pair are BH.7 Mk 4 and the next four are Mk 5 craft. Mk 5 craft fitted for, but not with, surface-to-surface missiles.

"WELLINGTON" Hovercraft 101 *1975, Imperial Iranian Navy*

8 "WINCHESTER" (SR.N6) CLASS (HOVERCRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	01	British Hovercraft Corporation	1973
—	02	British Hovercraft Corporation	1973
—	03	British Hovercraft Corporation	1973
—	04	British Hovercraft Corporation	1974
—	05	British Hovercraft Corporation	1974
—	06	British Hovercraft Corporation	1975
—	07	British Hovercraft Corporation	1975
—	08	British Hovercraft Corporation	1975

Weight, tons: 10 normal max (basic weight 14 200 lb; disposable load 8 200 lb)
Dimensions, feet (metres): 48·4 × 25·3 × 15·9 (height) *(14·8 × 7·7 × 4·8)*
Guns: 1 or 2—·5 MGs
Main engines: 1 Gnome Model 1050 gas turbine = 58 knots
1 Peters diesel as auxiliary power unit

Ordered 1970-72. The Iranian Navy has the world's largest fully operational hovercraft squadron, which is used for coastal defence and logistic duties.

"WINCHESTER" Hovercraft 03 *1971*

MINE WARFARE FORCES

3 Ex-US "MSC 292 and 268" CLASS (MINESWEEPERS—COASTAL)

Name	No.	Builders	Commissioned
SHAHROKH (ex-USS *MSC 276*)	301	Bellingham Shipyards Co	1960
SIMORGH (ex-USS *MSC 291*)	302	Tacoma Boatbuilding Co	1962
KARKAS (ex-USS *MSC 292*)	303	Peterson Builders Inc	1959

Displacement, tons: 320 light; 378 full load
Dimensions, feet (metres): 145·8 × 28 × 8·3 *(44·5 × 8·5 × 2·5)*
Guns: 2—20 mm (twin)
Main engines: 2 General Motors diesels; 2 shafts; 890 bhp = 12·8 knots
Oil fuel, tons: 27
Range, miles: 2 400 at 11 knots
Complement: 40 (4 officers, 2 midshipmen, 34 men)

Originally class of four. Of wooden construction. Launched in 1958-61 and transferred from the USA to Iran under MAP in 1959-62. *Shahrokh* now in the Caspian Sea.

SIMORGH (old pennant number) *1975, Imperial Iranian Navy*

2 US "CAPE" CLASS (MINESWEEPERS—INSHORE)

Name	No.	Builders	Commissioned
HARISCHI (ex-*Kahnamuie*, ex-*MSI 14*)	311	Tacoma Boatbuilding Co	3 Sep 1964
RIAZI (ex-*MSI 13*)	312	Tacoma Boatbuilding Co	15 Oct 1964

Displacement, tons: 180 standard; 235 full load
Dimensions, feet (metres): 111 × 23 × 6 *(33·9 × 7 × 1·8)*
Gun: 1—5 MG
Main engines: Diesels; 650 bhp = 13 knots
Oil fuel, tons: 20
Range, miles: 1 000 at 9 knots
Complement: 23 (5 officers, 18 men)

Delivered to Iran under MAP. Laid down on 22 June 1962 and 1 February 1963, and transferred at Seattle, Washington, on 3 September 1964 and 15 October 1964, respectively. In August 1967 *Kahnamuie* was renamed *Harischi* as the name was required for one of the new US PFs (see Corvettes).

RIAZI (old pennant number) *1975, Imperial Iranian Navy*

SERVICE FORCES

Note: USS *Tringa* was not transferred.

1 REPLENISHMENT SHIP

Name	No.	Builders	Commissioned
KHARG	431	Swan Hunter Ltd, Wallsend	1978

Displacement, tonnes: 10 890 light; 33 014 full load
Measurement, tons: 20 100 deadweight; 21 100 gross
Dimensions, feet (metres): 680 × 87 × 30 *(207·2 × 26·5 × 9·1)*
Aircraft: 3 helicopters
Guns: 1—76 mm OTO Melara; 4—40 mm (twin) (boxed)
Main engine: Westinghouse geared turbine; 26 870 shp; 1 shaft
Boilers: 2 Babcock & Wilcox, 2-drum high pressure
Speed, knots: 21·5
Complement: 248

Ordered October 1974. Laid down 27 January 1976. Launched 3 February 1977.
A design incorporating some of the features of the British "Ol" class but carrying ammunition and dry stores in addition to fuel.
Ship handed over to Iranian crew in late January 1980 but remained in UK.

KHARG *1978, Swan Hunter Ltd*

4 LANDING SHIPS (LOGISTIC)

Name	No.	Builders	Commissioned
HENGAM	511	Yarrow (Shipbuilders) Ltd, Clyde	12 Aug 1974
LARAK	512	Yarrow (Shipbuilders) Ltd, Clyde	12 Nov 1974
LAVAN	513	Yarrow (Shipbuilders) Ltd, Clyde	6 Dec 1979
TONB	514	Yarrow (Shipbuilders) Ltd, Clyde	1979

Displacement, tons: 2 500
Dimensions, feet (metres): 305 × 49 × 7·3 *(93 × 15 × 2·4)*
Guns: 4—40 mm (single)
Main engines: 4 Paxman 12 YJCM diesels; 2 shafts; 5 600 bhp (511, 512); MTU diesels (513, 514)
Speed, knots: 14·5
Range, miles: 3 500 at 12 knots
Complement: 80 plus 227 embarked troops

Smaller than British *Sir Lancelot* design with no through tank deck. Carry up to nine tanks depending on size (one Chieftain abreast or two T54/55). First two ordered 25 July 1972. *Hengam* laid down late 1972, launched 27 September 1973. *Larak* laid down 1973, launched 7 May 1974. Four more ordered 20 July 1977. *Lavan* laid down 6 February 1978, launched (not named) 12 June 1979. *Tonb* ready for launch autumn 1979. Some payments made over, construction continuing slowly but the order had not been cancelled by spring 1981. The material for the last two ships of the second order had been ordered by Yarrows when the order was cancelled in early 1979.

Names: Islands in the Gulf.

HENGAM *1978, Imperial Iranian Navy*

2 FLEET SUPPLY SHIPS

Name	No.	Builders	Commissioned
BANDAR ABBAS	421	C. Lühring Yard, Brake, W. Germany	Apr 1974
BOOSHEHR	422	C. Lühring Yard, Brake, W. Germany	Nov 1974

Measurement, tons: 3 250 deadweight
Dimensions, feet (metres): 354·2 × 54·4 × 14·8 *(108 × 16·6 × 4·5)*
Aircraft: 1 helicopter
Guns: 2—40 mm
Main engines: 2 MAN (MTU) diesels; 2 shafts; 6 000 bhp
Speed, knots: 16
Complement: 60

Combined tankers and store-ships carrying victualling, armament and general stores. *Bandar Abbas* launched 11 August 1973. *Booshehr* launched 23 March 1974. A third ship was ordered in 1978 but this may have been cancelled.

BOOSHEHR *2/1978, Chris Gee*

1 Ex-US "AMPHION" CLASS (REPAIR SHIP)

Name	No.	Builders	Commissioned
CHAHBAHAR (ex-USS *Amphion*, ex-*AR 13*)	441	Tampa Shipbuilding Co	30 Jan 1946

Displacement, tons: 7 826 standard; 14 490 full load
Dimensions, feet (metres): 492 × 70 × 27·5 *(150·1 × 21·4 × 8·4)*
Guns: 2—3 in/50
Main engines: Westinghouse turbines; 1 shaft; 8 500 shp = 16·5 knots
Boilers: 2 Foster-Wheeler
Complement: Accommodation for 921

Launched on 15 May 1945. Transferred on loan to the Iran Navy on 1 October 1971. Purchased 1 March 1977. Based at Bandar Abbas as permanent repair facility, although she does go to sea occasionally.

CHAHBAHAR (old pennant number) *1972, Imperial Iranian Navy*

1 HARBOUR TANKER

Name	*No.*	*Builders*	*Commissioned*
HORMUZ (ex-*YO 247*)	401	Cantiere Castellammare	1956

Displacement, tons: 1 250 standard; 1 700 full load
Dimensions, feet (metres): 178·3 × 32·2 × 14 *(54·4 × 9·8 × 4·3)*
Guns: 2—20 mm
Main engine: 1 Ansaldo Q 370, 4-cyl diesel
Oil fuel, tons: 25

Cargo oil capacity: 5 000 to 6 000 barrels.

HORMUZ *1970, Imperial Iranian Navy*

2 WATER TANKERS

KANGAN **TAHERI**

Displacement, tons: 9 430
Dimensions, feet (metres): 460 pp × 70·5 × 16·5 *(139 × 21·2 × 5)*
Main engine: MAN diesel; 7 385 hp = 15 knots

Kangan laid down 23 January 1976, launched 24 March 1977. *Taheri* laid down 14 April 1976. Both built at Mazagon Docks, Bombay, completing in 1978 and 1979.

1 Ex-US "YW-83" CLASS (WATER TANKER)

LENGEH (ex-US *YW 88*) 402

Displacement, tons: 1 250 standard
Dimensions, feet (metres): 178·3 × 32·2 × 14 *(54·4 × 9·8 × 4·3)*
Main engines: Diesels; speed = 10 knots

Transferred to Iran by the USA in 1964. Similar to tanker *Hormuz*.

2 Ex-ITALIAN LINERS

RAFFELLO **MICHELANGELO**

Purchased as barracks ships at Chahbahar and Bandar Abbas. Retain Italian names. Of 42 000 tons and originally 29 knots.

MICHELANGELO *1978, Michael D. J. Lennon*

1 TUG

BAHMANSHIR 451

Harbour tug (ex-US Army *ST 1002*), 150 tons, transferred in 1962.

2 HARBOUR TUGS

No. 1 (ex-West German *Karl*) **No. 2** (ex-West German *Ise*)

Sister ships of 134 tons taken over from West Germany 17 June 1974. Both built 1962-63.

12 ROTORK CRAFT

Six FAC 412 and six LSC 512.

26 BARGES

Built in Pakistan 1976-79 the largest being a 260 ft self-propelled lighter.

FLOATING DOCK

400 (ex-US *ARD 28*, ex- *FD 4*)

Lift: 3 000 tons

Transferred on loan September 1971. Of steel construction. Purchased 1 March 1977.

YACHTS

Name	*No.*	*Builders*	*Commissioned*
SHAHSAVAR	—	N.V. Boele, Bolnes, Netherlands	1936

Displacement, tons: 530
Dimensions, feet (metres): 176 × 25·3 × 10·5 *(53·7 × 7·7 × 3·2)*
Main engines: 2 Stork diesels; 1 300 bhp

Launched in 1936. In the Caspian Sea.

Name	*No.*	*Builders*	*Commissioned*
KISH	—	Burmester, Bremen, West Germany	1970

Displacement, tons: 178
Dimensions, feet (metres): 122 × 25 × 7 *(37·2 × 7·6 × 2·1)*
Main engines: 2 MTU diesels; 2 920 hp

A smaller and more modern Yacht. In the Persian Gulf.

COAST GUARD

20 "65 ft Mk II" CLASS (COASTAL PATROL CRAFT)

1201-1220

Built by Peterson Builders, Wisconsin 1975-76. Armed with three 20 mm and two ·5 machine guns.

6 SEWART TYPE (COASTAL PATROL CRAFT)

MAHNAVI-HAMRAZ **MAHNAVI-VAHEDI** **MORVARID**
MAHNAVI-TAHERI **MARDJAN** **SADAF**

Displacement, tons: 10 standard
Dimensions, feet (metres): 40 × 11 × 3·7 *(12·2 × 3·4 × 1·1)*
Guns: Light MGs
Main engines: 2 General Motors diesels = 30 knots

Small launches for port duties of Sewart (USA) standard 40 ft type. All transferred June 1953. Pennant numbers 5001 and above. Some serve in the Caspian Sea.

SURVEY VESSELS

(Operated by the Ministry of Finance except for *Abnegar*)

MEHR

Of 422 tons. Launched in 1964. Complement 22.

ABNEGAR

A 50 ton wooden oceanographic vessel built in Ireland. Operated by the Iran Navy.

HYDROGRAPH SHAHPOUR

Of 9 tons. Launched in 1965.

HYDROGRAPH PAHLAVI

Of 9 tons. Launched in 1966.

CUSTOMS VESSELS

TOUFAN **TOUSAN**

Built by CN Inmar, La Spezia in 1954-55. Of 65 tons with twin diesels, speed 22 knots.

IRAQ

Ministerial

Minister of Defence:
Major General Adnan Khairallah

Administration

Commander-in-Chief:
Rear-Admiral Abd Al Diri
Chief of Staff:
Commander Samad Sat Al Mufti

Personnel

(a) 1981: 3 000 officers and men
(b) 2 years' national service

Bases

Basra, Umm Qasr

New Construction

In January 1980 an agreement between Iraq and Italy was announced. This was for the building of four "Lupo" class frigates, six 650 ton missile corvettes and a "Stromboli" class replenishment tanker. This agreement is reported as still valid.

Strength of the Fleet

Type	*Active*	*Building*
Frigate/Training Ship	—	1
LCTs	4	—
Fast Attack Craft—Missile	12	—
Large Patrol Craft	5	—
Fast Attack Craft—Torpedo	12	—
Coastal Patrol Craft	26	—
Minesweepers—Ocean	2	—
Minesweepers—Inshore	3	—

Mercantile Marine

Lloyd's Register of Shipping:
142 vessels of 1 465 949 tons

SOVIET-IRAQI TREATIES

Under the treaty, signed in April 1972, the Soviet fleet would have access to the Iraqi base of Umm Qasr, in return for Soviet assistance to strengthen Iraq's defences. This resulted in the acquisition by Iraq of 14 "Osa" class.
A further treaty signed in August 1976 has been kept secret but it is reported that, from the naval point of view, it includes provision for the Soviet occupation of Umm Qasr in return for the provision of "ten missile frigates" to Iraq. However it does not appear that this was implemented.

FRIGATE/TRAINING SHIP

0 + 1 YUGOSLAV TYPE

IBN KHALDOUM

Displacement, tons: 1 850 full load
Dimensions, feet (metres): 317·3 × 36·7 × 11·8 *(96·7 × 11·2 × 3·6)*
Aircraft: Design allows for a helicopter
Missiles: Can carry 4 SSM
Guns: 1—57 mm; 2—20 mm (may be increased)
A/S weapons: Design allows for 2 A/S torpedo tubes and an A/S mortar
Main engines: 1 gas turbine; 2 diesels
Speed, knots: 27 (gas); 20 (diesels)
Complement: 93 +100 trainees

Ordered in Yugoslavia in 1978. Delivery probably in 1981. It is not clear of what type the engines will be—a Soviet gas turbine is available and orders for SEMT-Pielstick diesels have been fulfilled.

AMPHIBIOUS FORCES

4 Ex-SOVIET "POLNOCHNIY" CLASS (LCTs)

ATIKA GANDA NOUH +1

Displacement, tons: 700 standard; 1 150 full load
Dimensions, feet (metres): 269 × 32·8 × 5·8 *(82 × 10 × 1·8)*
Guns: 4—30 mm (twins); 2—140 mm rocket launchers
Main engines: 2 diesels; 5 000 bhp = 18 knots
Complement: 40

Built in Poland to Batch C design—first pair transferred in 1977, third in 1978 and fourth in October 1979. Of original hull design but with a new type of deck-structure amidships. This would appear to be a form of helicopter platform. The swimming-pool sized hole in the middle is probably a stores lift, closed for helicopter operations.

Radar: Fire control: Drum Tilt.
Navigation: Don 2.

IRAQI "POLNOCHNIY" Class *5/1977, MOD*

LIGHT FORCES

4 Ex-SOVIET "OSA I" and 8 "OSA II" CLASSES
(FAST ATTACK CRAFT—MISSILE)

HAZIRANI SA'D KANUN ATH-THANI 6 KHALID IBN NISAN 7 AL WALID TAMUZ 17 ("Osa I") +5 ("Osa II")

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (twins)
Main engines: 3 diesels; 12 000 hp ("Osa I"), 15 000 ("Osa II") = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

A combination of six "Osa I" delivered 1972-74, two since deleted, and eight "Osa II" delivered in pairs in 1974, 1975 and 1976.

Names: Some of those reported are very similar to Arabic names of the months and may, therefore, be suspect.

Radar: Search: Square Tie.
Fire control: Drum Tilt.

"OSA I" Class

3 Ex-SOVIET "SO I" CLASS (LARGE PATROL CRAFT)

310 **311** **312**

Displacement, tons: 170 standard; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (twins)
A/S weapons: 4—MBU 5-barrelled
Mines: 12
Main engines: 3 diesels; 7 500 bhp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 30

Delivered by the USSR to Iraq in 1962.

Radar: Search: Pot Head.
IFF: High Pole A; Dead Duck.

Sonar: One hull-mounted.

12 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

AL ADRISI
AL BAHI
AL SHAAB
AL TAMI
ALEF
IBN SAID
LAMAKI
RAMADAN
SHULAB
TAMUR
TAREQ BEN ZAID
+1

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (twins)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 4 diesels; 4 shafts; 4 800 bhp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Transferred from the USSR. Two were received in 1959, four in November 1960, and six in January 1961. Pennant numbers include 217-222.

"P 6" Class *1970, USN*

2 Ex-SOVIET "POLUCHAT I" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 70 standard; 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 400 hp = 20 knots
Range, miles: 460 at 17 knots
Complement: 15

Transferred by the USSR in late 1960s. Also used for torpedo recovery.

"POLUCHAT I" Class *10/1975, MOD*

4 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
ABD AL RAHMAN	1	John I. Thornycroft & Co Ltd,	1937
AL GHAZI	2	John I. Thornycroft & Co Ltd,	1937
DAT AL DIYARI	3	John I. Thornycroft & Co Ltd,	1937
JANNADA	4	John I. Thornycroft & Co Ltd,	1937

Displacement, tons: 67
Dimensions, feet (metres): 100 × 17 × 3 *(30·5 × 5·2 × 0·9)*
Guns: 1—3·7 in howitzer; 2—3 in mortars; 4 MGs
Main engines: 2 Thornycroft diesels; 2 shafts; 280 bhp = 12 knots

Protected by bullet-proof plating. All launched, completed and delivered in 1937.

5 Ex-SOVIET "ZHUK" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 50 standard; 60 full load
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 2—14·5 mm MGs (twin); 1—12·7 mm aft
Main engines: 2 M 50 diesels; 2 shafts; 2 400 hp
Speed, knots: 34
Complement: 17

Transferred in 1975.

"ZHUK" Class

2 Ex-SOVIET "NYRYAT II" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 125
Dimensions, feet (metres): 95·1 × 16·4 × 5·6 *(29 × 5 × 1·7)*
Main engine: 1 diesel = 12 knots
Range, miles: 1 600 at 10 knots
Complement: 15

Similar in appearance to "PO 2" class without bulwarks. Multi-purpose craft probably used as diving craft.

3 Ex-SOVIET "PO 2" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 95 full load
Dimensions, feet (metres): 82 × 16·7 × 5·6 *(25 × 5·1 × 1·7)*
Guns: 2—25 mm or 2—12·7 mm
Main engines: 2 diesels = 30 knots

8 THORNYCROFT "36 ft" TYPE

Length, feet (metres): 36 *(10·9)*
Main engine: 1 diesel; 125 bhp

Patrol boats built by John I. Thornycroft & Co for the Iraqi Ports Administration.

4 THORNYCROFT "21 ft" TYPE

Length, feet (metres): 21 *(6·4)*
Main engine: 1 diesel; 40 bhp

Pilot despatch launches built by John I. Thornycroft & Co for the Iraqi Ports Administration.

6 ROTORK CRAFT

All CSB 408 Type.

MINE WARFARE FORCES

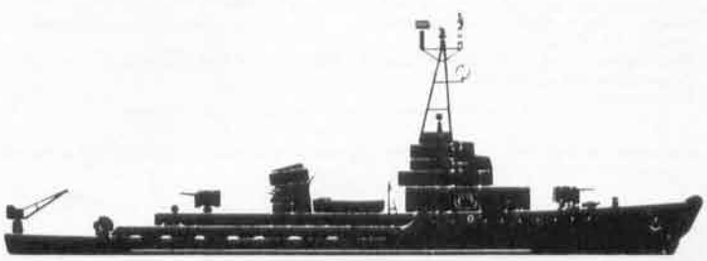
2 Ex-SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

AL YARMOUK 465 **AL KADISIA** 467

Displacement, tons: 580 full load
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)*
Guns: 2—37 mm L63 (twin); 2—25 mm L70 (twin)
A/S weapons: 2 DCTs
Mines: 20
Main engines: 2 diesels; 2 shafts; 2 200 hp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Transferred early 1970s.

Radar: Search: Ball End.
Navigation: Neptun.



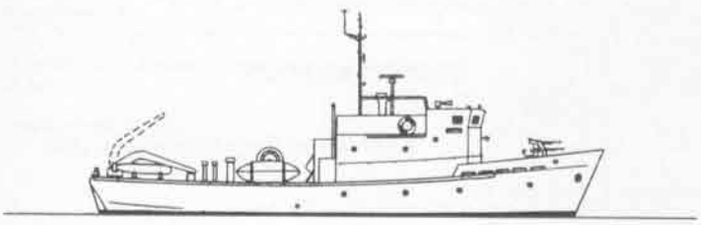
"T 43" Class

3 Ex-SOVIET "YEVGENYA" CLASS (MINESWEEPERS—INSHORE)

Displacement, tons: 80 full load
Dimensions, feet (metres): 79 × 16·4 × 3·9 *(24·1 × 5 × 1·2)*
Guns: 2—14·5 mm (twin)
Main engine: 1 diesel; 1 shaft; 1 200 hp = 12 knots
Range, miles: 1 000 at 9 knots
Complement: 10

GRP hulls. Delivered in 1975 under cover-name of "oceanographic craft".

Radar: Navigation: Don 2.
IFF: High Pole.



"YEVGENYA" Class *1976, S. Breyer*

HARBOUR AUTHORITY CRAFT

AL THAWRA (ex-*Malike Aliye*)

Displacement, tons: 746
Main engines: Diesels; 2 shafts; 1 800 shp = 14 knots

Royal Yacht before assassination of King Faisal II in 1958, after which she was renamed *Al Thawra (The Revolution)* instead of *Malike Aliye (Queen Aliyah)*.

AL THAWRA *1966, Aldo Fraccaroli*

MISCELLANEOUS

A number of customs craft and a large Dutch-built dredger of the Harbour Authority are also listed.

IRELAND

Minister for Defence:
Mr. S. Barrett
Flag Officer Commanding Naval Service:
Commodore L. S. Moloney

Naval Base

Haulbowline Island (Cork). Headquarters' naval base and dockyard, naval school, sea-going replacement section, ship support and maintenance section. Expansion of this base to Spike Island has been proposed although this would involve an expensive project of half-a-mile of bridge or causeway. Still under investigation. Meanwhile Spike Island is used for recruit training.

Personnel

(a) 1981: Approximately 1 000 officers and men
(b) Voluntary service

Prefix to Ships' Names

LE

Mercantile Marine

Lloyd's Register of Shipping:
141 vessels of 208 986 tons gross

DELETION

1978 *Ferdia* returned to private ownership

PATROL VESSELS

0 + 2 "P 31" CLASS

Displacement, tons: 1 800
Dimensions, feet (metres): 265 × 39·4 × 13·8 *(80·8 × 12 × 4·2)*
Aircraft: 1 helicopter
Guns: To be decided
Speed, knots: 20+
Range, miles: 7 000+ at 15 knots
Complement: 85

In October 1980 it was stated that an order would be placed shortly for these two ships. To be delivered in October 1982 and March 1983.

4 "P 22" and "DEIRDRE" CLASSES

Name	*No.*	*Builders*	*Commissioned*
DEIRDRE	P 20	Verolme, Cork	May 1972
EMER	P 21	Verolme, Cork	9 Jan 1978
AOIFE	P 22	Verolme, Cork	12 Oct 1979
AISLING	P 23	Verolme, Cork	21 May 1980

Displacement, tons: 972 *(Deirdre)*; 1 019·5 (Remainder)
Dimensions, feet (metres): 184·3 pp × 34·1 × 14·4 *(56·2 × 10·4 × 4·4) (Deirdre)*; 213·7 × 34·4 × 14 *(65·2 × 10·5 × 4·4)* (Remainder)
Guns: 1—40 mm Bofors; 2—20 mm Oerlikon (not *Deirdre*)
Main engines: 2 British Polar diesels *(Deirdre)*; 2 SEMT-Pielstick ("P 22") coupled to 1 shaft; cp propeller; 4 200 bhp *(Deirdre)*, 4 800 bhp (Remainder) = 18 knots
Oil fuel, tons: 170
Range, miles: 4 500 at 18 knots; 6 750 at 12 knots
Complement: 46 (5 officers, 41 men)

Stabilisers fitted. *Deirdre* was the first vessel ever built for the Naval Service in Ireland costing £1·07 million. Launched on 29 December 1971. The port after boat has been deleted in *Emer* and subsequent ships. In December 1977 a contract for *Aoife* was placed with Verolme, Cork at a cost of £5 million. *Aisling* launched 3 October 1979. All of Navesbu design. *Emer* cost £2·7 million.

Class: In January 1978 the Minister of Defence stated that it was intended to continue construction at the rate of one per year. It is further reported that the target total is eight ships including *Deirdre, Emer, Aoife* and *Aisling*. The latter two are of similar construction to *Emer* with the addition of a bow thruster and KaMeWa four-bladed skewed propeller.

EMER *1979, Bateman*

Electronics: Decca Mk 21 navigator; full communications UHF to MF; satellite navigation in P22 and 23.

Radar: Two Decca sets.

Sonar: Simrad SU (hull-mounted).

COASTAL MINESWEEPERS

3 Ex-BRITISH "TON" CLASS

Name	*No.*	*Builders*	*Commissioned*
GRAINNE (ex-HMS *Oulston*, M 1129)	CM 10	Thornycroft	1955
BANBA (ex-HMS *Alverton*, M 1104)	CM 11	Camper and Nicholson Ltd, Gosport	1953
FÓLA (ex-HMS *Blaxton*, M 1132)	CM 12	Thornycroft	1956

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·6 × 8·4 × 2·5)*
Guns: 1—40 mm; 2—20 mm
Main engines: 2 diesels; 2 shafts; 3 000 bhp = 15 knots
Oil fuel, tons: 45
Range, miles: 2 500 at 12 knots
Complement: 30

Former British "Ton" class coastal minesweepers. Double mahogany hulls and otherwise constructed of aluminium alloy and other materials with the lowest possible magnetic signature. Purchased from the UK in 1971 for fishery protection duties as replacements for previous corvettes. To be replaced by patrol vessels.

FÓLA *1979, Irish Naval Service*

SUPPLY AND TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
SETANTA (ex-*Isolda*)	A 15	Liffey D.Y., Dublin	1953

Displacement, tons: 1 173
Dimensions, feet (metres): 208 pp × 38 × 13 *(63·5 × 11·6 × 4)*
Guns: 2—20 mm Oerlikon
Main engines: Steam recip; 1 500 ihp; 2 shafts = 11·5 knots
Oil fuel, tons: 276
Range, miles: 3 500 at 10 knots
Complement: 44

Acquired from the Commissioners of Irish Lights in 1976.

MISCELLANEOUS

Name	*No.*	*Builders*	*Commissioned*
JOHN ADAMS	—	Richard Dunston, Thorne, S. Yorks.	1934

Measurement, tons: 94 gross
Dimensions, feet (metres): 85 × 18·5 × 7 *(25·9 × 5·6 × 2·1)*
Main engine: Diesel; 216 bhp = 10 knots

Employed on harbour duties. New engine fitted in 1976. Civilian manned for harbour duties.

COLLEEN II

Service launch, built at Wicklow in 1972. Civilian manned.

CHOWL

Oil barge of 100 tons with single 50 hp diesel.

SIR CECIL ROMER **RAVEN II** **JACKDAW**

Civilian manned passenger transports based at Cork. Taken over 1938.

TAILTE

Dufour 35 yacht for sail training. Bought December 1979.

ISRAEL

Ministerial

Minister of Defence:
Isaac Shamir

Headquarters' Appointment

Commander in Chief of the Israeli Navy:
Commodore Zeev Almog

Diplomatic Representation

Defence Attaché in London:
Brigadier Général E. Barak
Naval Attaché in Rome:
Captain P. Pinchasi
Naval Attaché in Washington:
Captain M. Tabak

Personnel

(a) 1981: 6 600 (800 officers and 5 800 men, of whom 3 500 are conscripts. Includes a Naval Commando)
(b) 3 years' national service for Jews and Druses
Note: (An additional 5 000 Reserves available on mobilisation).

Bases

Haifa, Ashdod, Sharm-el-Sheikh
A repair base has been built at Eilat where a synchro-lift is installed.

Prefix to Ships' Names

INS (Israeli Naval Ship)

Guns

14 Phalanx 20 mm close-in weapons systems have been ordered. It is not known for which "Saar" class these are intended.

Missiles

The re-equipment with Gabriel 2 (with double the range of Gabriel 1) will take a considerable time. Until this is achieved a mixed-bag of Gabriel 1 and 2 and Harpoon will be in use.

Deployment

At Sharm-el-Sheikh there are normally 4 "Reshef" class, 2 "Saar" class, 6 "Dabur" class, some tugs, landing craft and a depot ship.

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Patrol Submarines	3	—
Fast Attack Craft (Missile)	25	2
Hydrofoils	—	2 (10)
Hovercraft	2	—
Coastal Patrol Craft	40	2
"Firefish"	1	—
LSMs	3	—
LCTs	6	—
LCMs	3	—
Transports	2	—
Support Ship	1	—
Training Ship	1	—

Mercantile Marine

Lloyd's Register of Shipping:
56 vessels of 450 216 tons gross

DELETIONS

Submarines

1975 *Leviathan* (ex-"T" class)
1977 *Dolphin* (ex-"T" class)

Light Forces

1975 12 Bertram Type; 14 Swift Type
1976 *Yarkon*

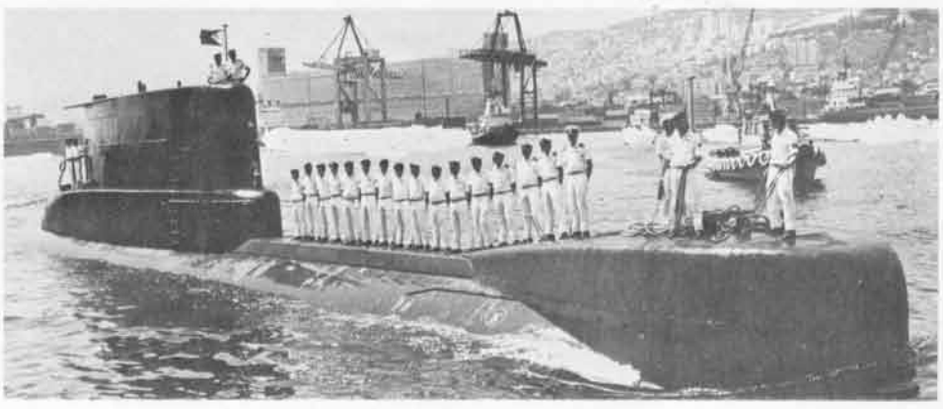
SUBMARINES

3 IKL/VICKERS TYPE 206

Name	No.	Builders	Laid down	Launched	Commissioned
GAL	—	Vickers Ltd, Barrow	1973	2 Dec 1975	Jan 1977
TANIN	—	Vickers Ltd, Barrow	1974	25 Oct 1976	1977
RAHAV	—	Vickers Ltd, Barrow	—	—	Dec 1977

Displacement, tons: 420 surfaced; 600 dived
Dimensions, feet (metres): 146·7 × 15·4 × 12 *(45 × 4·7 × 3·7)*
Torpedo tubes: 8—21 in *(533 mm)* bow
Main machinery: Diesels; 2 000 hp; electric motor; 1 800 hp; 1 shaft; diesel-electric
Speed, knots: 11 surfaced; 17 dived
Complement: 22

A contract was signed for the building of these boats by Vickers in April 1972.



TANIN *1978, Israeli Navy*

CORVETTES

NEW CONSTRUCTION

Displacement, tons: 850
Dimensions, feet (metres): 253·2 × 28·9 × 13·8 (screws) *(77·2 × 8·8 × 4·2)*
Aircraft: 1 helicopter
Missiles: SSM; 4—Gabriel 2 (single launchers) (see note)
Guns: 2—76 mm OTO Melara; 6—30 mm (twins)
A/S weapons: 1 triple Bofors 375 mm rocket launcher
Main engines: CODAG; 1 General Motors LM2500 gas turbine; 24 000 bhp; 2 MTU diesels; 4 000 hp; 2 shafts (cp propellers)
Speed, knots: 40-42 (gas); 25 (diesels)
Range, miles: 4 500 on diesels
Complement: 45

A new design (QU-09-35) prepared by Israel Shipyards Haifa. Will probably have a mix of Harpoon and Gabriel. These ships may well be intended for target acquisition for Harpoon fitted "Reshefs" with command and control facilities. So far no orders reported.

NEW CONSTRUCTION

LIGHT FORCES

2 + 2 "SAAR 4·5" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
ALIA	—	Haifa Shipyard	end 1980
—	—	Haifa Shipyard	mid-1981
—	—	Haifa Shipyard	—
—	—	Haifa Shipyard	—

Displacement, tons: 488
Dimensions, feet (metres): 202·4 × 24·9 × 8·2 *(61·7 × 7·6 × 2·5)*
Aircraft: 1 Bell Kiowa A/S helicopter (with hangar)
Missiles: SSM; 4 Gabriel (forward); 4 Harpoon
Gun: 1—40 mm (see note)
Main engines: 4 Maybach (MTU) diesels; 8 280 hp; 2 shafts
Speed, knots: 31
Complement: 53

Alia launched 11 July 1980. It is also reported that four 12·7 mm Brownings are carried and that the 40 mm will be replaced by an Israeli PCM 30 mm when trials of that gun are completed.

ALIA *1980, Israeli Navy*

9 "SAAR 4" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
RESHEF	—	Haifa Shipyard	Apr 1973
KESHET	—	Haifa Shipyard	Oct 1973
KIDON	—	Haifa Shipyard	Sep 1974
TARSHISH	—	Haifa Shipyard	Mar 1975
YAFFO	—	Haifa Shipyard	Apr 1975
NITZHON	—	Haifa Shipyard	Mar 1979
KOMEMIUT	—	Haifa Shipyard	Oct 1979
ATSMOUT	—	Haifa Shipyard	Nov 1979
MOLEDET	—	Haifa Shipyard	mid-1980

Displacement, tons: 415 standard; 450 full load
Dimensions, feet (metres): 190·6 × 25 × 8 *(58 × 7·8 × 2·4)*
Missiles: SSM; 4 Harpoon, 5 Gabriel (single launchers)
Guns: 2—76 mm/62 (single Compact); 2—20 mm Oerlikon
Engines: 4 Maybach (MTU) diesels; 2 670 hp each; 2 shafts
Speed, knots: 32
Range, miles: 1 650 at 30 knots; 4 000 at 17·5 knots
Complement: 45

These steel-hulled boats carry US missiles, Israeli-made missiles and electronics as well as chaff launchers.

Reshef was launched on 19 February 1973; *Keshet* 2 August 1973.
This very interesting class has an extremely long range at cruising speed, two pairs having made the passage from Israel to the Red Sea via the Strait of Gibraltar and Cape of Good Hope, relying entirely on refuelling at sea. This is a great tribute not only to their endurance but also to their sea-keeping qualities. A further illustration of this was the appearance of two "Saar 4" class in New York July 1976.
The first pair was successfully engaged in the Arab-Israeli War, October 1973.

Aircraft: *Tarshish* had her after 76 mm gun removed to make way for a helicopter platform.

Deployment: *Yaffo* in Mediterranean. Others in Red Sea.

Missiles: Fitted with four Harpoon from January-February 1978 in addition to Gabriel. Harpoons fitted with Israeli homing systems. The Gabriel II system, which is being retrofitted, has a range of 22 miles and carries a TV camera which can transmit a homing picture to the firing ship beyond the radar horizon. The missile fit currently varies from boat to boat.

Sonar: Fitted in ships deployed in the Red Sea. (ELAC).

Transfers: Six of this class built for South Africa in Haifa and Durban. One *(Romah)* transferred to Chile late 1979 with possibly three more of the class to follow.

RESHEF *1974, Michael D. J. Lennon*

6 "SAAR 2" and 6 "SAAR 3" CLASSES
(FAST ATTACK CRAFT—MISSILE)

Name	*No*	*Builders*	*Commissioned*
"Saar 2"			
MIVTACH	311	Ch. de Normandie	1968
MIZNAG	312	Ch. de Normandie	1968
MIFGAV	313	Ch. de Normandie	1968
EILATH	321	Ch. de Normandie	1968
HAIFA	322	Ch. de Normandie	1968
AKKO	323	Ch. de Normandie	1968
"Saar 3"			
SAAR	331	Ch. de Normandie	1969
SOUFA	332	Ch. de Normandie	1969
GAASH	333	Ch. de Normandie	1969
HEREV	341	Ch. de Normandie	1969
HANIT	342	Ch. de Normandie	1969
HETZ	343	Ch. de Normandie	1969

Displacement, tons: 220 standard; 250 full load
Dimensions, feet (metres): 147·6 × 23 × 8·2 *(45 × 7 × 2·5)*
Missiles: SSM: Gabriel (see notes)
Guns: 40 mm or 76 mm (see notes)
A/S weapons: See note
Main engines: 4 Maybach (MTU) diesels; 13 500 bhp; 4 shafts = 40+ knots
Oil fuel, tons: 30
Range, miles: 2 500 at 15 knots; 1 600 at 20 knots; 1 000 at 30 knots
Complement: 35 to 40

Built from designs by Lürssen Werft of Bremen with steel hulls and light alloy superstructures. Political problems caused their building in France instead of West Germany—a political embargo kept the last five in France until their journey to Israel began on Christmas Eve 1969. Two batches were built, the first six (1 and 2) being fitted originally with three 40 mm guns and ordered in 1965. The second six (3) were ordered in 1966 and fitted with 76 mm OTO Melara guns. Five of these ships were delivered to Israel and two *(Akko* and *Saar)* made the journey on completion of local trials after the 1969 French arms embargo. The last five arrived off Haifa in January 1970 after a much publicised passage which proved the remarkable endurance of this class.
The first batch was fitted for sonar but this was omitted from the 76 mm gun fitted group. After their arrival in Israel provision of Gabriel surface to surface missiles progressed—the class was then classified "Saar 2" as opposed to "Saar 1". The first group can mount an armament varying from one 40 mm gun and eight Gabriel missiles (two single fixed mounts forward and two triple trainable mounts amidships) to three 40 mm guns and four A/S torpedo tubes. The second group can mount the two triple Gabriel launchers amidships as well as the 76 mm OTO Melara gun forward.
The Gabriel missile system is controlled by radar and optical sights and launches a low-altitude missile with a 150 lb HE head to a range of 12·5 miles in the first configuration and 22 miles in the later versions.

Sonar: ELAC sonar in "Saar 2".

Torpedoes: "Saar 2" designed for four torpedo tubes for Mk 46 torpedoes.

HANIT with one 40 mm and eight Gabriel missiles *1971, Israeli Navy*

"SAAR" Class with 76 mm and five Gabriel missiles *1973*

"SAAR" Class with 40 mm guns and torpedo tubes (see note) *1974*

0 + 2 + (10) US "FLAGSTAFF 2" CLASS (HYDROFOILS)

Displacement, tons: 91·5
Dimensions, feet (metres): 96·4 × 21·3 × — *(29·4 × 6·5 × —)*
Missiles: SSM: 4 Gabriel
Guns: 2—30 mm (twin) (possibly 1—76 mm OTO Melara)
Speed, knots: 52

The first pair has been ordered in the USA from Grumman with possibly ten more to be built in Israel.

2 "DVORA" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 47
Dimensions, feet (metres): 70·8 × 18 × 3·3 *(21·6 × 5·5 × 1)*
Missiles: SSM; 2 Gabriel (single launchers)
Guns: 2—20 mm (singles); 2 MGs
Main engines: 2 MTU 12V 331 TC81 diesels = 36 knots
Range, miles: 700 at 27 knots
Complement: 10

A private design of Israel Aircraft Industries (RAMTA) which is basically an improved "Dabur" class. The smallest missile craft so far built. First trials December 1977.

Radar: Decca 926.

"DVORA" Class *1979, Israeli Navy*

37 "DABUR" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 35 full load
Dimensions, feet (metres): 64·9 × 18 × 5·8 *(19·8 × 5·5 × 1·8)*
Guns: 2—20 mm; 2 twin MGs (see note)
A/S weapons: 2 launchers for Mk 46 torpedoes; DCs in some
Main engines: 2 General Motors V12·71 geared diesels; 1 920 shp; 2 shafts = 21·8 knots
Range, miles: 1 200 at 17 knots
Complement: 6/9 depending on armament

Twelve built in the USA and remainder by Israel Aircraft Industries (RAMTA). Aluminium hull. There are several variations in their armament. Deployed in the Mediterranean and Red Seas, this being facilitated as these craft have been designed for overland transport. Good rough weather performance. A continuing programme in hand at the IAI plant (RAMTA).

Missiles: There are reports that some may carry missiles of an unspecified type.

Radar: One Decca Super 101 Mk 3.

Transfer: Four to Argentina in 1978.

"DABUR" Class *10/1980, Israeli Navy*

3 "YATUSH" CLASS (Ex-US PBR TYPE) (COASTAL PATROL CRAFT)

Dimensions, feet (metres): 32 × 11 × 2·6 *(9·8 × 3·4 × 0·8)*
Guns: 2—12·7 mm MGs
Main engines: 2 geared diesels; waterjets = 25 knots
Complement: 5

Purchased 1974 and subsequently. GRP Hulls.

PBR Type *1976, Israeli Navy*

1 FIREFISH MODEL III

Displacement, tons: 6
Dimensions, feet (metres): 28 × 7·5 *(8·5 × 2·3)*
Main engines: 2 Mercruiser V-8; 430 hp
Speed, knots: 52
Range, miles: 250 cruising; 150 max speed

Built by Sandaire, San Diego. Glass fibre craft, can carry five men. Capable of being radio-controlled for attack missions or minesweeping under ship or aircraft control.

FIREFISH III *1976, Israeli Navy*

AMPHIBIOUS FORCES

3 Ex-US "LSM 1" CLASS

Displacement, tons: 1 095 full load
Dimensions, feet (metres): 203·5 × 34·5 × 7·3 *(62·1 × 10·5 × 2·2)*
Guns: 2—40 mm; 4—20 mm
Main engines: Diesels; 2 800 bhp; 2 shafts = 12·5 knots
Complement: 70

Purchased in 1972 from commercial sources.

"LSM 1" Class *1976, Israeli Navy*

3 "ASH" CLASS (LCTs)

Name	*No.*	*Builders*	*Commissioned*
ASHDOD	61	Israel Shipyards, Haifa	1966
ASHKELON	63	Israel Shipyards, Haifa	1967
ACHZIV	65	Israel Shipyards, Haifa	1967

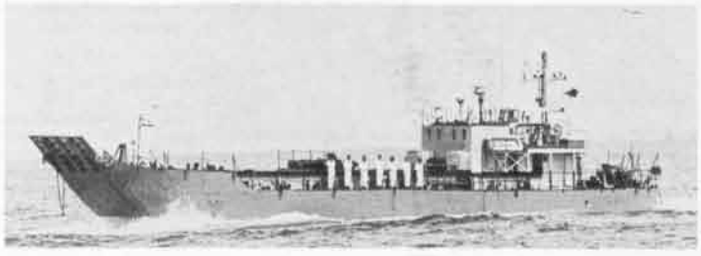
Displacement, tons: 400 standard; 730 full load
Dimensions, feet (metres): 205·5 × 32·8 × 5·8 *(62·7 × 10 × 1·8)*
Guns: 2—20 mm
Main engines: 3 MWM diesels; 3 shafts; 1 900 bhp = 10·5 knots
Oil fuel, tons: 37
Complement: 20

"ASH" Class (being fitted with helicopter deck aft) *1976, Israeli Navy*

3 LC TYPE (LCTs)

Name	*No.*	*Builders*	*Commissioned*
ETZION GEUBER	51	Israel Shipyards, Haifa	1965
SHIQMONA	53	Israel Shipyards, Haifa	1965
KESSARAYA	55	Israel Shipyards, Haifa	1965

Displacement, tons: 182 standard; 230 full load
Dimensions, feet (metres): 120 × 23·2 × 4·7 *(Etzion Geuber* of only 90 ft *(27·5)* length) *(36·6 × 7·1 × 1·4)*
Guns: 2—20 mm
Main engines: 2 diesels; 2 shafts; 1 280 bhp = 10 knots
Complement: 12



SHIQMONA *1976, Israeli Navy*

3 Ex-US LCM TYPE

Displacement, tons: 22 tons standard; 60 full load
Dimensions, feet (metres): 50 × 14 × 3·2 *(15·3 × 4·3 × 1)*
Main engines: 2 diesels; 450 bhp = 11 knots

2 SEALAND Mark III HOVERCRAFT

Purchased in the UK in 1978.

SUPPORT SHIPS

Note: Training ship *Nogah* converted from 500 ton coaster.

Name	*No.*	*Builders*	*Commissioned*
MA'OZ	—	Todd Marine, Washington	1976

Displacement, tons: 4 000?

Oil-rig tender for use as Light Forces Support ship.

1 "BAT YAM" CLASS (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
BAT YAM	T 82	Netherlands	—

A small armed merchant ship of 1 200 tons used as a transport. Bought from Netherlands in 1967.

1 "BAT SHEVA" CLASS (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
BAT SHEVA	—	Netherlands	1967

Displacement, tons: 900
Dimensions, feet (metres): 311·7 × 36·7 × 26·9 *(95·1 × 11·2 × 8·2)*
Guns: 4—20 mm
Main engines: Diesels; speed = 10 knots
Complement: 26

Purchased from South Africa in 1968.

AUXILIARIES

1 "YAR" CLASS (TRAINING CRAFT)

Name	*No.*	*Builders*	*Commissioned*
YARDEN	42	Burmester, Germany	1958

Displacement, tons: 96 standard; 109 full load
Dimensions, feet (metres): 100 × 20 × 6 *(30·5 × 6·1 × 1·8)*
Guns: 2—20 mm
Main engines: MTU diesels; 2 shafts = 22 knots
Complement: 16

Has become non-naval training craft.

4 "KEDMA" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
KEDMA	46	Japan	1968
YAMA	48	Japan	1968
NEGBA	52	Japan	1968
ZAFONA	60	Japan	1968

Displacement, tons: 32
Dimensions, feet (metres): 67 × 15 × 4·8 *(20·4 × 4·6 × 1·5)*
Guns: 2 MGs
Main engines: 2 diesels; 2 shafts; 1 540 bhp = 25 knots
Complement: 10

Used for Coast Guard and police work in peace time.

ITALY

Headquarters' Appointments

Chief of Defence Staff:
Admiral Giovanni Torrisi
Chief of Naval Staff:
Admiral Mario Bini
Chief of Naval Personnel:
Rear-Admiral Valerio Del Nero
Vice Chief of Naval Staff:
Vice-Admiral Marcello Celio

Principal Commands

Commander, Allied Naval Forces, Southern Europe (Naples) and Commander-in-Chief Dipartimento Basso Tirreno:
Admiral Angelo Monassi
Commander-in-Chief of Fleet (and Comedcent):
Admiral Giuseppe Di Giovanni
Commander-in-Chief Dipartimento Alto Tirreno:
Admiral Vittorio Gioncada
Commander-in-Chief Dipartimento Adriatico:
Vice-Admiral Sergio Agostinelli
Commander-in-Chief Dipartimento dello Jonio e Canale d'Otranto:
Vice-Admiral Antonio Fedele
Commander Sicilian Naval Area:
Rear-Admiral Renato Giovanetti
Commander Sardinian Naval Area:
Vice-Admiral Marizio Carpani
Commander Submarine Force:
Rear-Admiral Narciso Tonarelli
1st Naval Squadron:
Rear-Admiral Cesare Pellini
2nd Naval Squadron:
Rear-Admiral Mario Porta
3rd Naval Squadron:
Rear-Admiral Giovanni Clara
4th Naval Squadron:
Rear-Admiral Giulio Benini
Naval Commandos:
Rear-Admiral Giorgio Landolfi

Diplomatic Representation

Naval Attaché in Bonn:
Captain Giuseppe Nicoletti
Naval Attaché in London:
Captain Alfredo Civetta
Naval Attaché in Moscow:
Commander Francesco Cuomo
Naval Attaché in Paris:
Captain Armando De Stefano
Naval Attaché in Washington:
Captain Achille Zanoni

Personnel

(a) 1981: 41 900 (including Naval Air Arm and San Marco Battalion, (Force of Marines))
(b) 1½ years' national service

Bases

Main—La Spezia (Alto Tirreno), Taranto (Jonio e Canale d'Otranto), Ancona (Adriatico)
Secondary—Brindisi, Augusta, Messina, La Maddalena, Cagliari, Naples, Venice

Naval Air Arm

2 LRMP Squadrons—18 Breguet Atlantics (BR 1150) (increasing to 32)(No 86, Catania; No 88, Cagliari/Elmas)
1 Medium MP Squadron—18 S2F Trackers (No 87—Catania)
2 Shore-based helicopter squadrons (16 SH3D) (For *Giuseppe Garibaldi*)
3 Ship-borne helicopter squadrons (27 AB 212)
12 Bell-Agusta for training and communications

Notes: (a) Atlantics operated by Navy with Air Force support and maintenance.
(b) Total of 48 AB 212 helicopters planned.
(c) Further 30 Sea Kings planned for embarkation and for Catania and La Spezia.

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines	9	2
Light Aircraft Carriers	1	1
Cruisers	2	—
Destroyers	6	—
Frigates	12	6
Corvettes	8	(6)
Hydrofoil—Missile	4	3
Fast Attack Craft	7	—
LSTs	2	—
Minehunters	3	4 (6)
Minesweepers—Ocean	4	—
Minesweepers—Coastal	24	—
Minesweepers—Inshore	5	—
Survey/Research Vessels	4	—
Replenishment Tankers	2	—
Transport	1	—
Fleet Support Ship	1	—
Coastal Transports	8	—
Transports (LCM)	18	—
Transports (LCVP)	32	—
Sail Training Ships	4	—
Netlayer	1	—
Lighthouse Tenders	3	—
Salvage Ships	2	—
Repair Craft	7	—
Water Carriers	12	—
Tugs—Large	10	—
Tugs—Small	42	—

Planned Strength of the Fleet

Type	
Submarines	8
Aircraft Carriers	2
Large training Ship	1
Missile Destroyers	6
Frigates/Corvettes	20
Fast Attack Craft	10-12
MCM Vessels	24
Fleet Support Ships	3
LRMP Squadrons	3
Helicopters	

Shipbuilding and Conversion Programme

In 1975 a law (Legge Navale) was approved which provided 1 000 000 million lire for the next ten years (1975-84), for the provision of new ships and helicopters over and above the normal annual expenditure.
The tentative new-construction programme under the Legge Navale is as follows:

Submarines "Sauro" class	2
Light Anti-Submarine Carrier	1
Guided Missile Destroyers	(2)
Frigates "Maestrale" class	6 (2)
"Sparviero" Hydrofoils	6
Minehunters	4 (6)
LPD	(1)
Salvage ship	1
Replenishment Tanker; sister to *Stromboli*	1
AB 212 helicopters	27 (9)

Figures in brackets indicate ships and aircraft which were in the Legge Navale programme but have been delayed because of lack of funds.
All ships in service to be modernised.

Mercantile Marine

Lloyd's Register of Shipping:
1 739 vessels of 11 095 694 tons gross

DELETIONS

Submarines

1975 *Francesco Morosini* ("Balao" class) (15 Nov)
1976 *Evangelista Torricelli*
1977 *Alfredo Cappellini* ("Balao" class)
1980 *Primo Longobardo* (Guppy) (13 Jan)

Destroyers

1975 *Geniere*
1977 *Fanté*
1980 *San Giorgio*

Frigates

1975 *Aviere* (target)
1976 *Aldebaran* (ex-US "Cannon" class)
1980 *Luigi Rizzo, Castore*

Corvettes

1976-77 *Sfinge, Bombarda, Chimera* ("Ape" class)
1977 *Vedetta* (ex-US PC)

Minesweepers (Coastal)

1974 *Rovere, Acacia, Betulla, Ciliegio*
1977 *Abete*
1980 *Glicine, Gaggia, Faggio, Ontaro, Pino*

Minesweepers (Inshore)

1974 *Arsella, Attinia, Calamaro, Conchiglia, Dromia, Ostrica, Paguro, Seppia, Tellina, Totano*
1979 *Gambero, Pinno, Scampo*
1980 *Granchio, Riccio*

Amphibious Forces

1974 *Anteo, MTM 9903, 9904, 9906, 9921, MTP 9701, 9702, 9704-6, 9709, 9712, 9717, 9718, 9721, 9722, 9724, 9731*
1976 *MTP 9713, 9726, MTM 9908*
1979 *MTP 9708, 9714*
1980 *MTP 9707, 9710, 9719, MTM 9922*

Light Forces

1974 *MS 472* (ex-*813*)
1975 *MS 452* (ex-*852*) *MS 473* (ex-*813*)
1977 *Folgore*
1978 *MS 474, 481*

Miscellaneous

1974 *Po, Flegetonte, Isonzo, Sesia, Metauro, Arno, Leno* and *Sprugola* (water carriers). 24 tugs
1975 *Sterope* (replenishment tanker), *Frigido* (water carrier), *MTM 9916-7, Porto Vecchio* (tug)
1976 *Volturno, Tevere* (water carriers)
1977 *Filicudi, Rampino*
1979 *Ape* (auxiliary), *Caprera, Porto Pisano, Levanzo, Salvore* (tugs)
1980 *HC 9801* (hovercraft), *MTC 1102, Timavo, R 96, Asinara*

PENNANT LIST

Submarines

S 502	Gianfranco Gazzana Priaroggia
S 505	Attilio Bagnolini
S 506	Enrico Toti
S 513	Enrico Dandolo
S 514	Lazzaro Mocenigo
S 515	Livio Piomarta
S 516	Romeo Romei
S 518	Nazario Sauro
S 519	Fecia di Cossato
S 520	Leonardo da Vinci
S 521	Guglielmo Marconi

Light Aircraft Carriers

C 550	Vittorio Veneto
C 551	Giuseppe Garibaldi

Cruisers

C 553	Andrea Doria
C 554	Caio Duilio

Destroyers

D 550	Ardito
D 551	Audace
D 558	Impetuoso
D 559	Indomito
D 570	Impavido
D 571	Intrepido

Frigates

F 551	Canopo
F 554	Centauro
F 555	Cigno
F 564	Lupo
F 565	Sagittario
F 566	Perseo
F 567	Orsa
F 570	Maestrale
F 571	Grecale
F 572	Libeccio
F 573	Scirocco
F 574	Aliseo
F 575	Euro
F 576	Espero
F 577	Zefiro
F 580	Alpino
F 581	Carabiniere
F 593	Carlo Bergamini
F 594	Virginio Fasan
F 595	Carlo Margottini

Corvettes

F 540	Pietro De Cristofaro
F 541	Umberto Grosso
F 542	Aquila
F 543	Albatros
F 544	Alcione
F 545	Airone
F 546	Licio Visintini
F 550	Salvatore Todaro

Light Forces

P 420	Sparviero
P 421	Nibbio
P 422	Falcone
P 423	Astore
P 424	Grifone
P 425	Gheppio
P 426	Condor
P 491	Lampo
P 492	Baleno
P 493	Freccia
P 494	Saetta
—	MS 441
—	MS 443
—	MS 453

Minesweepers/Hunters

M 5430	Salmone
M 5431	Storione
M 5432	Sgombro
M 5433	Squalo

Minesweepers/Hunters

M 5450	Aragosta
M 5452	Astice
M 5459	Mitilo
M 5463	Polipo
M 5464	Porpora
M 5504	Castagno
M 5505	Cedro*
M 5508	Frassino
M 5509	Gelso
M 5510	Larice
M 5511	Noce
M 5512	Olmo
M 5516	Platano*
M 5517	Quercia
M 5519	Mandorlo*
M 5521	Bambù*
M 5522	Ebano*
M 5523	Mango*
M 5524	Mogano*
M 5525	Palma*
M 5527	Sandalo*
M 5531	Agave*
M 5532	Alloro*
M 5533	Edera*
M 5535	Gelsomino*
M 5536	Giaggiolo*
M 5538	Loto*
M 5540	Timo*
M 5541	Trifoglio*
M 5542	Vischio*
M 5550	Lerice*
M 5551	Sapri*
M 5552	Milazzo*
M 5553	Vieste*

* Hunters

Amphibious Forces

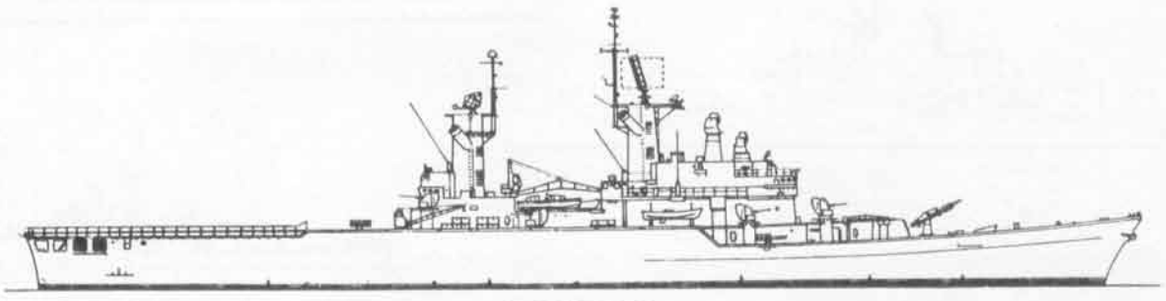
L 9871	Andrea Bafile
L 9890	Grado
L 9891	Caorle

Service Forces

A 5301	Pietro Cavezzale
A 5303	Ammiraglio Magnaghi
A 5304	Alicudi
A 5306	Mirto
A 5307	Pioppo
A 5309	Anteo
A 5310	Proteo
A 5311	Palinuro
A 5312	Amerigo Vespucci
A 5313	Stella Polare
A 5314	Quarto
A 5315	Barbara
A 5316	Corsaro II
A 5317	Atlante
A 5318	Prometeo
A 5319	Ciclope
A 5320	Colosso
A 5321	Forte
A 5322	Gagliardo
A 5323	Robusto
A 5326	S. Giusto
A 5327	Stromboli
A 5329	Vesuvio
A 5331-5338	MOC 1201-1208
A 5354	Piave
A 5356	Basento
A 5357	Bradano
A 5358	Brenta

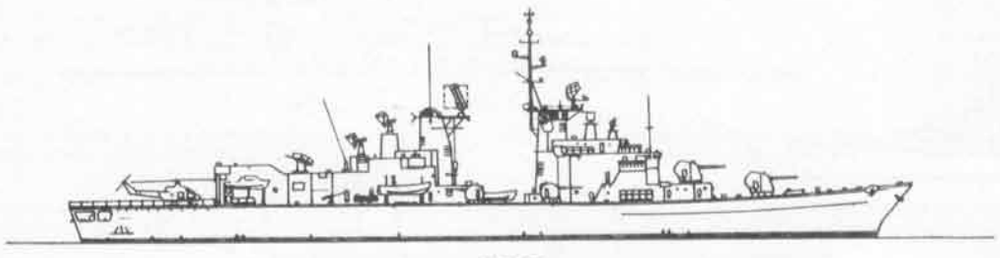
Service Forces

A 5359	Bormida
A 5361-5363	MTF 1301-1303
A 5369	Adige
A 5374	Mincio
A 5376	Tanaro
A 5377	Ticino
A 5388	Ercole
Y 412	Albenga
Y 414	Arzachena
Y 415	Asinara
Y 416	Lampedusa
Y 417	Boeo
Y 419	Carbonara
Y 421	Chioggia
Y 422	Pozzi
Y 424	Favignana
Y 430	Linaro
Y 432	Pantelleria
Y 433	Circeo
Y 434	Pianosa
Y 435	Mesco
Y 436	Porto d'Ischia
Y 437	Nisida
Y 439	Passero
Y 440	Piombino
Y 441	Porto Recanati
Y 443	Riva Trigoso
Y 446	San Benedetto
Y 447	Tino
Y 448	Ustica
Y 451	Vigoroso
Y 454	Sperone
Y 469	No 78
Y 473	Rizzuto
Y 474	No 96



VITTORIO VENETO

ANDREA DORIA



AUDACE

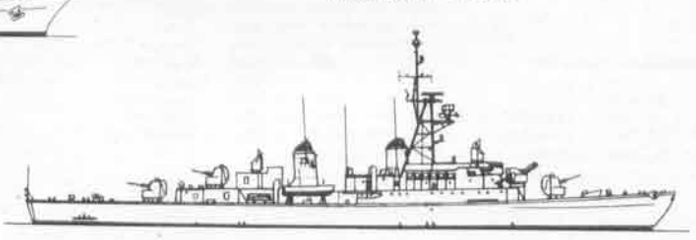
INDOMITO

IMPETUOSO

IMPAVIDO

MAESTRALE

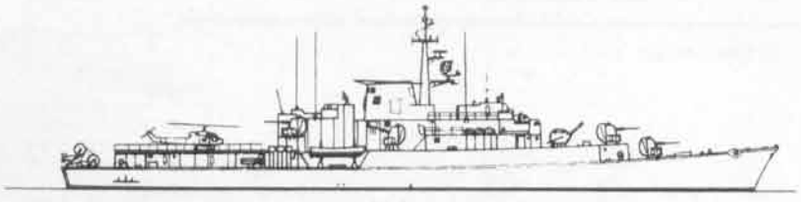
AMMIRAGLIO MAGNAGHI



CENTAURO

LUPO

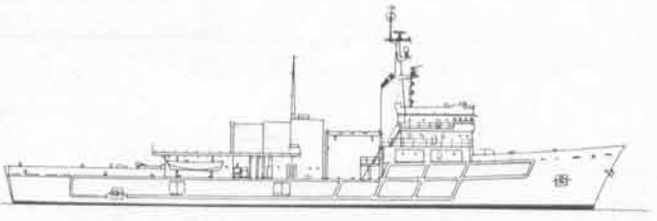
PIETRO DE CRISTOFARO



ALPINO

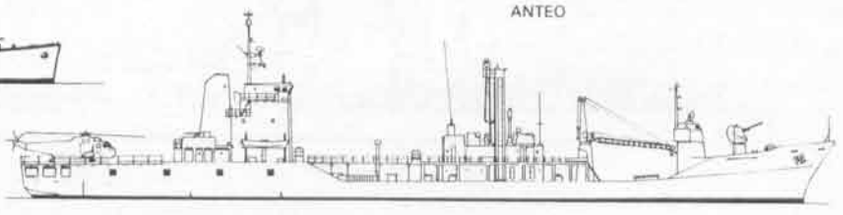
ALBATROS

BERGAMINI

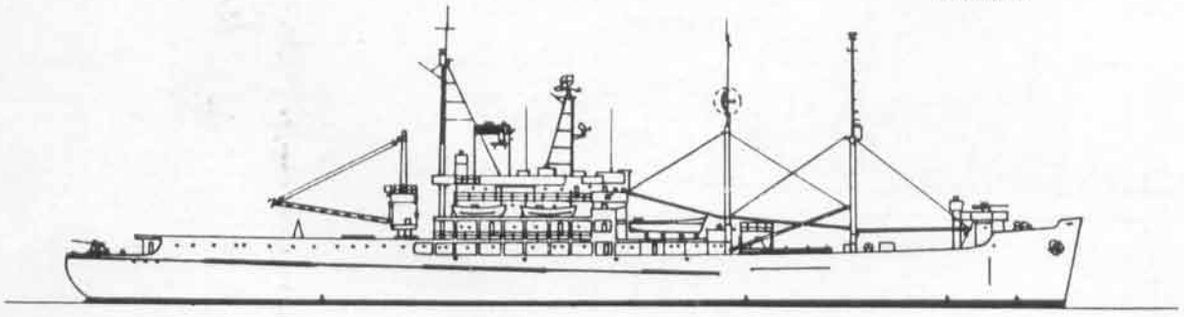


ANTEO

PIETRO CAVEZZALE



STROMBOLI



ANDREA BAFILE

Drawings by Lieutenant-Commander Erminio Bagnasco

SUBMARINES

2 + 2 "SAURO" CLASS (1081 TYPE)

Name	No.	Builders	Laid down	Launched	Commissioned
NAZARIO SAURO	S 518	Italcantieri, Monfalcone	15 July 1974	9 Oct 1976	1 Mar 1980 (see notes)
FECIA DI COSSATO	S 519	Italcantieri, Monfalcone	15 Nov 1975	16 Nov 1977	1 Mar 1980 (see notes)
LEONARDO DA VINCI	S 520	Italcantieri, Monfalcone	8 June 1978	20 Oct 1979	1981
GUGLIELMO MARCONI	S 521	Italcantieri, Monfalcone	23 Oct 1979	20 Sep 1980	1981

Displacement, tons: 1 456 surfaced; 1 631 dived
Dimensions, feet (metres): 210 × 22·5 × 18·9 *(63·9 × 6·8 × 5·7)*
Torpedo tubes: 6—21 in *(533 mm)* (bow) (6 reloads)
Main machinery: 3 diesel generators; 3 210 bhp; 1 electric motor; 3 650 hp; 1 shaft
Speed, knots: 11 surfaced; 20 dived; 12 (snorting)
Range, miles: 7 000 miles surfaced; 12 500 snorting at 4 knots—17 500 with fuel overload; 400 miles dived at 4 knots; 20 miles dived at 20 knots
Endurance: 45 days
Complement: 45 (including 4 for training)

Two of this class were originally ordered in 1967 but were cancelled in the following year. Reinstated in the building programme in 1972. Second pair provided for in Legge Navale and ordered 12 February 1976.
The discrepancy in commissioning dates of *N. Sauro* and *F. di Cossato* is due to problems over the main batteries. *F. di Cossato* was provided with a new Swedish battery which was satisfactory. *N. Sauro* was then similarly fitted. Both passed acceptance trials on 5 November 1979 (S 519) and 1 January 1980 (S 518) but were not fully commissioned until above dates.

Diving depth: 985 ft *(300 m)* (max)—820 ft *(250 m)* (normal).

Electronics: ECM; IFF, full communications fit.

NAZARIO SAURO *5/1980, Commander Aldo Fraccaroli*

Radar: One search/navigation set: 3 RM 20/SMG.

Sonar: Active and passive: Velox.
Passive ranging: Acoustic ESM.

4 "TOTI" CLASS (1075 TYPE)

Name	No.	Builders	Laid down	Launched	Commissioned
ATTILIO BAGNOLINI	S 505	Italcantieri, Monfalcone	15 Apr 1965	26 Aug 1967	16 June 1968
ENRICO TOTI	S 506	Italcantieri, Monfalcone	15 Apr 1965	12 Mar 1967	22 Jan 1968
ENRICO DANDOLO	S 513	Italcantieri, Monfalcone	10 Mar 1967	16 Dec 1967	25 Sep 1968
LAZZARO MOCENIGO	S 514	Italcantieri, Monfalcone	12 June 1967	20 Apr 1968	11 Jan 1969

Displacement, tons: 460 standard; 524 surfaced; 582 dived
Dimensions, feet (metres): 151·5 × 15·4 × 13·1 *(46·2 × 4·7 × 4)*
Torpedo tubes: 4—21 in *(533 mm)*
Main machinery: 2 Fiat MB 820 N/I diesels, 1 electric motor, diesel-electric drive; 2 200 hp; 1 shaft
Speed, knots: 14 surfaced; 15 dived
Range, miles: 3 000 at 5 knots (surfaced)
Complement: 26 (4 officers, 22 men)

Italy's first indigenously-built submarines since the Second World War. The design was recast several times.

Diving depth: 600 ft *(180 m)*.

Electronics: WT, HF, UHF and VLF equipment. Computer based fire control.

Radar: Search/navigation set: 3 RM 20/SMG.
IFF: ECM.

Sonar: Passive set in stem.
Active set in bow dome.
Passive range finding.
Ray path analyzer.

LAZZARO MOCENIGO *6/1978, Commander Aldo Fraccaroli*

2 Ex-US "TANG" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
LIVIO PIOMARTA (ex-USS *Trigger*, SS 564)	S 515	General Dynamics (Electric Boat Div)	24 Feb 1949	3 Dec 1951	19 Aug 1952
ROMEO ROMEI (ex-USS *Harder*, SS 568)	S 516	General Dynamics (Electric Boat Div)	30 June 1950	14 June 1951	31 Mar 1952

Displacement, tons: 2 050 surfaced; 2 700 dived
Dimensions, feet (metres): 287 × 27·3 × 19 *(87·4 × 8·3 × 6·2)*
Torpedo tubes: 8—21 in *(533 mm)*; 6 bow, 2 stern
Main machinery: 3 diesels; 4 500 shp; 2 shafts; 2 electric motors; 5 600 hp
Speed, knots: 15·5 surfaced; 16 dived
Range, miles: 11 000 at 11 knots
Complement: 75 (7 officers, 68 men)

Transferred as follows: *Romeo Romei* 20 February 1974, *Livio Piomarta* 10 July 1973. Subsequently refitted at Philadelphia Navy Yard. To be deleted 1983-84.

Radar: BPS-12.

LIVIO PIOMARTA *9/1979, Achille Rastelli*

1 Ex-US "GUPPY III" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
GIANFRANCO GAZZANA PRIAROGGIA (ex-USS *Pickerel*, SS 524)	S 502	Boston Navy Yard	8 Feb 1944	15 Dec 1944	4 Apr 1949

Displacement, tons: 1 975 standard; 2 450 dived
Dimensions, feet (metres): 326·5 × 27 × 17 *(99·4 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in; 6 bow, 4 stern
Main machinery: 4 diesels; 6 400 bhp; 2 electric motors; 5 400 shp; 2 shafts
Speed, knots: 20 surfaced; 15 dived
Oil fuel, tons: 300
Range, miles: 12 000 at 10 knots (surfaced)
Complement: 85 (10 officers, 75 men)

Transferred 18 August 1972.

GIANFRANCO GAZZANA PRIAROGGIA — *1978, Commander Aldo Fraccaroli*

LIGHT AIRCRAFT CARRIERS

1 NEW CONSTRUCTION

Name	No.	Builders	Laid down	Launched	Commissioned
GIUSEPPE GARIBALDI	C 551	Italcantieri, Monfalcone	1981	1983	1985

Displacement, tons: 10 100 standard; 13 370 full load
Dimensions, feet (metres): 590·4 × 99·7 × 22 *(180 × 30·4 × 6·7)*
Flight deck, feet (metres): 570·7 × 99·7 *(174 × 30·4)*
Aircraft: 18 Sea King helicopters (12 in hangar, 6 on deck) or equivalent
Missiles: SSM; 4 Teseo launchers for Otomat Mk 2 (6 reloads); SAM; 2 Albatros systems with Aspide missiles
Guns: 6—40/70 mm guns (3 twins) with Dardo control system
A/S weapons: 6 A/S torpedo tubes (2 triple) for Mk 46 or Type 244 torpedoes
Main engines: 4 Fiat/GE LM2 500 gas turbines; 80 000 hp; 2 shafts
Speed, knots: 30
Range, miles: 7 000 at 20 knots
Complement: 550 (accommodation 825)

Contract awarded 21 November 1977.
The design has already changed considerably. To replace *Andrea Doria* and *Duilio*. Design work completed February 1980 and engineering work began in March 1980.

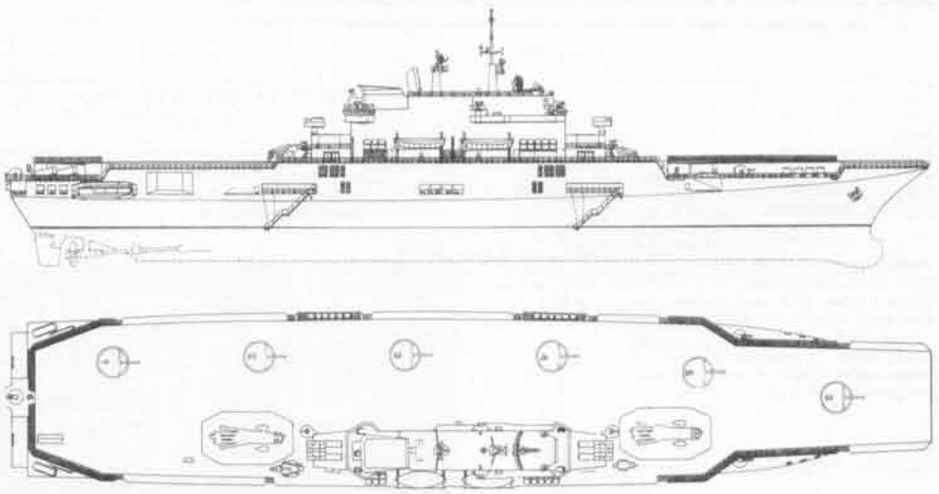
Aircraft: VSTOL may also be included in the complement.

Electrics: Six 1950 kVA diesel alternators

Electronics: System I PN 10 for data processing.

Missiles: If trials are satisfactory in 1981-82 Vanessa anti-missile system to be fitted.

Radar: Long range surveillance: RAN 3L. (3D).
Medium range surveillance: RAT 31.
Air surveillance: RAN 10S.
Combined search: SMA MM/SPS 702.
Tracking: Selenia RTN 20X.
Fire control: NA 30 for Albatros.
Navigation: SPS 703.



GIUSEPPE GARIBALDI — *1978, Italcantieri*

Rocket launcher: Two SCLAR D.

Sonar: One DE 1160.

GIUSEPPE GARIBALDI — *1980, Italcantieri*

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
VITTORIO VENETO	C 550	Italcantieri, Castellammare	10 June 1965	5 Feb 1967	12 July 1969

Displacement, tons: 7 500 standard; 8 850 full load
Dimensions, feet (metres): 589 × 63·6 × 19·7 *(179·6 × 19·4 × 6)*
Aircraft: 9 AB-212 helicopters
Missiles: SAM: Terrier (est 40; twin launcher Mk 10; Aster system)
Guns: 8—3 in *(76 mm)*/62 (MMK single)
A/S weapons: 2 triple US Mk 32 for A/S torpedoes; helicopter torpedoes
Main engines: 2 Tosi double reduction geared turbines; 73 000 shp; 2 shafts
Boilers: 4 Foster-Wheeler type (Ansaldo); 711 psi *(50 kg/cm²)*; 842°F *(450°C)*
Speed, knots: 32
Oil fuel, tons: 1 200
Range, miles: 6 000 at 20 knots
Complement: 550 (50 officers, 500 men)

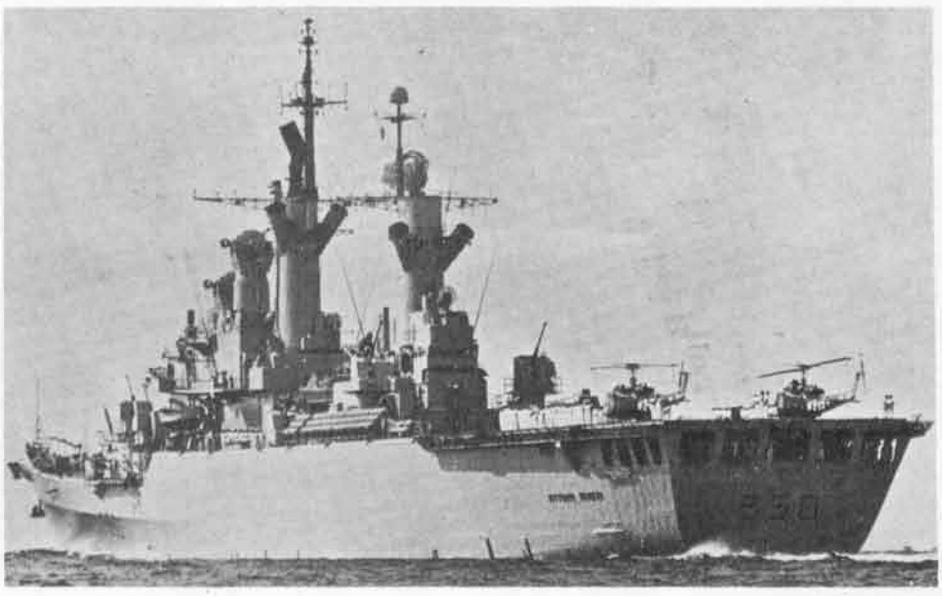
Developed from the "Andrea Doria" class but with much larger helicopter squadron and improved facilities for anti-submarine operations. Projected under the 1959-60 New Construction Programme, but her design was recast several times. Started trials 30 April 1969. Flagship of C-in-C Fleet. Fitted with two sets of stabilisers.

Electronics: Tacan URN-20 fitted.

Radar: Air search and target designator (3D on fore funnel): One SPS 52.
Long range search (after funnel): One SPS 40.
Search: One SMA/SPQ 2.
Terrier fire control: Two SPG 55B.
Gun fire control: Four Orion radars in Argo/Elsag NA9 systems.
Navigation: 3 RM 7.

SCLAR: Fitted with control and launchers for SCLAR rockets—range 7 miles; fitted with HE heads, flares or chaff.

Sonar: One SQS 23.



VITTORIO VENETO *1974, Dr. Giorgio Arra*

VITTORIO VENETO *1973, Dr. Giorgio Arra*

VITTORIO VENETO *1973, Dr. Giorgio Arra*

CRUISERS

2 "ANDREA DORIA" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ANDREA DORIA	C 553	Cantieri Navali Riuniti, Riva Trigoso	11 May 1958	27 Feb 1963	23 Feb 1964
CAIO DUILIO	C 554	Navalmeccanica, Castellammare	16 May 1958	22 Dec 1962	30 Nov 1964

Displacement, tons: 5 000 standard; 6 500 full load
Dimensions, feet (metres): 489·8 × 56·4 × 16·4 *(149·3 × 17·2 × 5)*
Aircraft: 4 AB-212 helicopters
Missiles: SAM; Terrier (est 32, twin launcher) (see *Refit* note)
Guns: 8—3 in *(76 mm)*/62 (single MMK)
A/S weapons: 2 triple US Mk 32 torpedo tubes; helicopter torpedoes
Main engines: 2 double reduction geared turbines 60 000 shp (*Doria*, CNR; *Duilio*, Ansaldo); 2 shafts
Boilers: 4 Foster-Wheeler 711 psi *(50 kg/cm²)* (Ansaldo, *Duilio*; CNR, *Doria*); 842°F *(450°C)*
Speed, knots: 31
Range, miles: 6 000 at 20 knots
Oil fuel, tons: 1 100
Complement: 470 (45 officers, 425 men)

Escort cruisers of novel design with a good helicopter capacity in relation to their size. *Enrico Dandolo* was the name originally allocated to *Andrea Doria*. Both to be replaced in late 1980s by *Giuseppe Garibaldi*.

Electronics: ECM and DF. Tacan beacon (URN-20).

Gunnery: The anti-aircraft battery includes eight 3-in fully automatic guns, disposed in single turrets, four on each side amidships abreast the funnels and the bridge.

Helicopter platform: Helicopters operate from a platform aft measuring 98·5 ft by 52·5 ft *(30 m by 16 m)*.

Radar: Air surveillance and target designator (3D on main-mast): One SPS 52 (*Doria*—SPS 768).
Long range search: One SPS 40.
Navigation: One SPQ 2.
Terrier fire control: Two SPG 55A (*Andrea Doria*—SPG 55C).
Gun fire control: Four Orion radars in Argo/Elsag NA9 systems.

Refit: *Andrea Doria* modernised 1976-78. SAM updated for Standard ER and improved electronics fitted.

Roll damping: Both ships have Gyrofin-Salmoiraghi stabilisers.

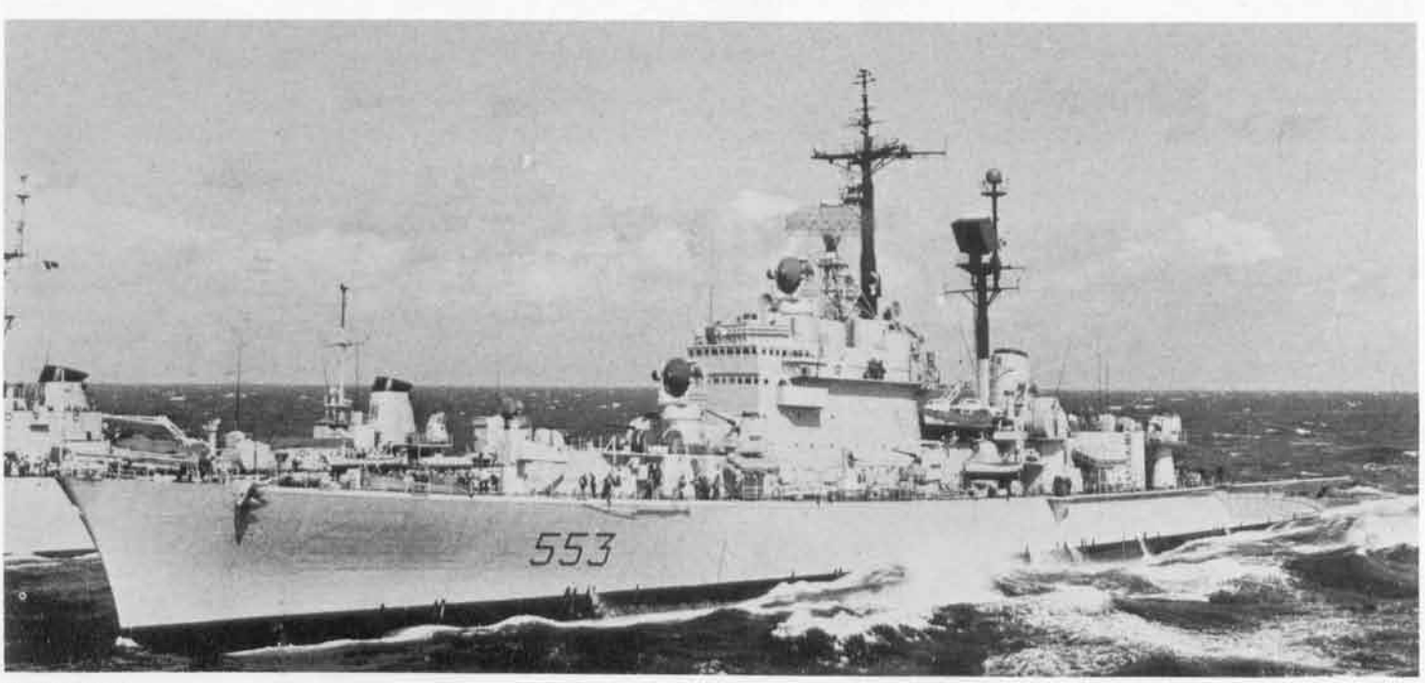
SCLAR: Fitted with control and launchers for SCLAR rockets—range 7 miles; fitted with HE heads, flares or chaff.

Sonar: One SQS 23 (*Doria*). One SQS 39 (*Duilio*).

Training: *Caio Duilio* relieved *San Giorgio* late summer 1980; refitted for task 1979-80.

CAIO DUILIO *10/1980, L. and L. van Ginderen*

CAIO DUILIO *7/1980, Marius Bar*



ANDREA DORIA *3/1979, Achille Rastelli*

DESTROYERS

Note: Two "Improved Audace" class with COGOG or CODOG machinery to be built under Legge Navale as replacements for "Impetuoso" class. At present this order has been postponed.

2 "AUDACE" CLASS (DDG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ARDITO	D 550	Italcantieri, Castellammare	19 July 1968	27 Nov 1971	5 Dec 1973
AUDACE	D 551	Cantieri Navali Riuniti, Riva Trigoso	27 Apr 1968	2 Oct 1971	16 Nov 1972

Displacement, tons: 3 600 standard; 4 400 full load
Dimensions, feet (metres): 448 × 46·6 × 15·1
(136·6 × 14·2 × 4·6)
Aircraft: 2 AB-212 helicopters
Missiles: SAM; Tartar/Standard (est 36; single launcher Mk 13)
Guns: 2—5 in *(127 mm)*/54 (single Compact);
4—3 in *(76 mm)*/62 (single Compact)
A/S weapons: 2 triple US Mk 32 torpedo tubes; helicopter torpedoes
Main engines: 2 double reduction geared turbines (*Audace*—CNR, *Ardito*—Ansaldo); 73 000 shp; 2 shafts
Boilers: 4 Foster-Wheeler type
Speed, knots: 33
Range, miles: 4 000 at 25 knots
Complement: 380 (30 officers, 350 men)

It was announced in April 1966 that two new guided missile destroyers would be built. They are basically similar to, but an improvement in design on that of the "Impavido" class. Both fitted with stabilisers.

Radar: Air surveillance (3D on after funnel): One SPS 52.
Tracking and missile guidance: Two SPG 51.
Air search: One SPS 12.
Surface search: SPQ 2.
Gun fire control: Three Orion RTN 10X for Argo 10/Elsag NA 10 systems.

SCLAR: Fitted with SCLAR control and launch units for 105 mm rockets which can be fitted with chaff dispensers, flares or HE heads and have a range of 7 miles.

Sonar: One CWE 610.

AUDACE

5/1980, Achille Rastelli

ARDITO

6/1978, Commander Aldo Fraccaroli

AUDACE

1980, L. and L. van Ginderen

2 "IMPAVIDO" CLASS (DDG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
IMPAVIDO	D 570	Cantieri Navali Riuniti, Riva Trigoso	10 June 1957	25 May 1962	16 Nov 1963
INTREPIDO	D 571	Italcantieri, Castellammare	16 May 1959	21 Oct 1962	28 July 1964

Displacement, tons: 3 201 standard; 3 851 full load
Dimensions, feet (metres): 429·5 × 44·7 × 14·8 *(131·3 × 13·6 × 4·5)*
Missiles: SAM; Tartar/Standard (est 36; single launcher Mk 13)
Guns: 2—5 in *(127 mm)*/38 (twin Mk 38);
4—3 in *(76 mm)*/62 (single MM 1)
A/S weapons: 2 triple US Mk 32 torpedo tubes
Main engines: 2 double reduction geared turbines 70 000 shp; 2 shafts
Boilers: 4 Foster-Wheeler; 711 psi *(50 kg/cm²)*; 842°F *(450°C)*
Speed, knots: 33
Oil fuel, tons: 650
Range, miles: 3 300 at 20 knots; 2 900 at 25 knots; 1 500 at 30 knots
Complement: 340 (23 officers, 317 men)

Built under the 1956-57 and 1958-59 programmes respectively. Both ships have stabilisers.

Engineering: On first full power trials *Impavido*, at light displacement, reached 34·5 knots (33 knots at normal load).

Modernisation: In 1974-75 *Intrepido* underwent modernisation which included the improvement of the missile system and the replacement of the original gun fire control system by Argo 10/Elsag NA 10 system. Same modifications carried out in *Impavido* 1976-77.

Radar: Search: SPS 12, SPS 39 (3-D) and SPQ 2.
Fire control: Two SPG 51 for Tartar; three Orion RTN 10X, Argo 10, Elsag NA 10 for guns.

SCLAR: Fitted with SCLAR control and launchers—for details see *Vittorio Veneto*.

Sonar: One SQS 23.

IMPAVIDO *1975, Michael D. J. Lennon*

INTREPIDO *6/1975, Dr. Giorgio Arra*

2 "IMPETUOSO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
IMPETUOSO	D 558	Cantieri Navali Riuniti, Riva Trigoso	7 May 1952	16 Sep 1956	25 Jan 1958
INDOMITO	D 559	Ansaldo, Leghorn (formerly OTO)	24 Apr 1952	7 Aug 1955	23 Feb 1958

Displacement, tons: 2 755 standard; 3 800 full load
Dimensions, feet (metres): 418·7 × 43·5 × 14·8 *(127·6 × 13·3 × 4·5)*
Guns: 4—5 in *(127 mm)*/38 (twin Mk 38);
16—40 mm/56 (twin and quad, Mk 1 and Mk 4)
A/S weapons: 2 triple US Mk 32 torpedo tubes; one 3-barrelled mortar; 4 DCTs; 1 DC rack
Main engines: 2 double reduction geared turbines; 2 shafts; 65 000 shp
Boilers: 4 Foster-Wheeler; 711 psi *(50 kg/cm²)* working pressure; 842°F *(450°C)* superheat temperature
Speed, knots: 34 (see *Engineering* notes)
Oil fuel, tons: 650
Range, miles: 3 400 at 20 knots
Complement: 315 (15 officers, 300 men)

Italy's first destroyers built since World War II. To be relieved in late 1980s by "Improved Audace" class which have been postponed.

Engineering: On their initial sea trials these ships attained a speed of 35 knots at full load.

Gunnery: For 5-in—US Mk 37 director with Mk 25 radar. For 40 mm—four mounts have US Mk 34 radars. In addition six US Mk 51 directors.

Radar: Search: SPS 6 and SPQ 2.
Fire control: One US Mk 25 for Mk 37 FCS; four SPG 34 for Mk 63 FCS.

Sonar: One SQS 11.

INDOMITO *1980, L. and L. van Ginderen*

IMPETUOSO *1980, L. and L. van Ginderen*

FRIGATES

0 + 6 + 2 "MAESTRALE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MAESTRALE	F 570	Cantieri Navali Riuniti, Riva Trigoso	13 Dec 1978	2 Feb 1981	1981
GRECALE	F 571	Cantieri Navali Riuniti, Muggiano	21 Mar 1979	1981	1982
LIBECCIO	F 572	Cantieri Navali Riuniti, Riva Trigoso	3 Mar 1980	Aug 1981	1982
SCIROCCO	F 573	Cantieri Navali Riuniti, Riva Trigoso	16 Nov 1980	1982	1982
ALISEO	F 574	Cantieri Navali Riuniti, Riva Trigoso	1981	1982	1983
EURO	F 575	Cantieri Navali Riuniti, Riva Trigoso	1981	1982	1983
ESPERO	F 576	Cantieri Navali Riuniti, Riva Trigoso	—	1983	1983
ZEFFIRO	F 577	Cantieri Navali Riuniti, Riva Trigoso	—	1983	1984

Displacement, tons: 2 500 standard; 3 040 full load
Dimensions, feet (metres): 405 × 42·5 × 27·4 (screws) *(122·7 × 12·9 × 8·4)*
Aircraft: 2 AB 212 helicopters
Missiles: SSM: 4 Otomat Mk 2 with Teseo system;
SAM: 4 Albatros with Aspide missiles (quad launcher)
Guns: 1—5 in *(127 mm)*/54 (Compact);
4—40 mm/70 (Breda Compact—twin)
A/S weapons: 2 triple US Mk 32 torpedo tubes
Torpedo tubes: 2 for A 184 torpedoes
Main engines: CODOG; 2 Fiat LM 2 500 gas turbines; 50 000 shp; 2 GTM B 230.00 DVM diesels; 11 000 hp; 2 shafts (cp propellers)
Speed, knots: 32 (gas); 21 (diesels)
Range, miles: 6 000 at 16 knots
Complement: 232 (24 officers, 208 ratings)

An improved "Lupo" class design provided for in Legge Navale. There has been a notable increase of 50 ft in length and 5 ft in beam over the "Lupo" class to provide for the fixed hangar and VDS, the result probably providing more comfortable accommodation. First six ordered December 1976 and last pair in October 1980. Fitted with stabilisers. Improved A/S capability and an integrated gun/missile control system.

"MAESTRALE" Class *1980, CNR*

Radar: Air search: RAN 10S.
Surface search: MM/SPS 702.
Navigation: MM/SPS 703.
Fire control: One Orion RM20 for Albatros; two Orion RM20 for Dardo gun control system.

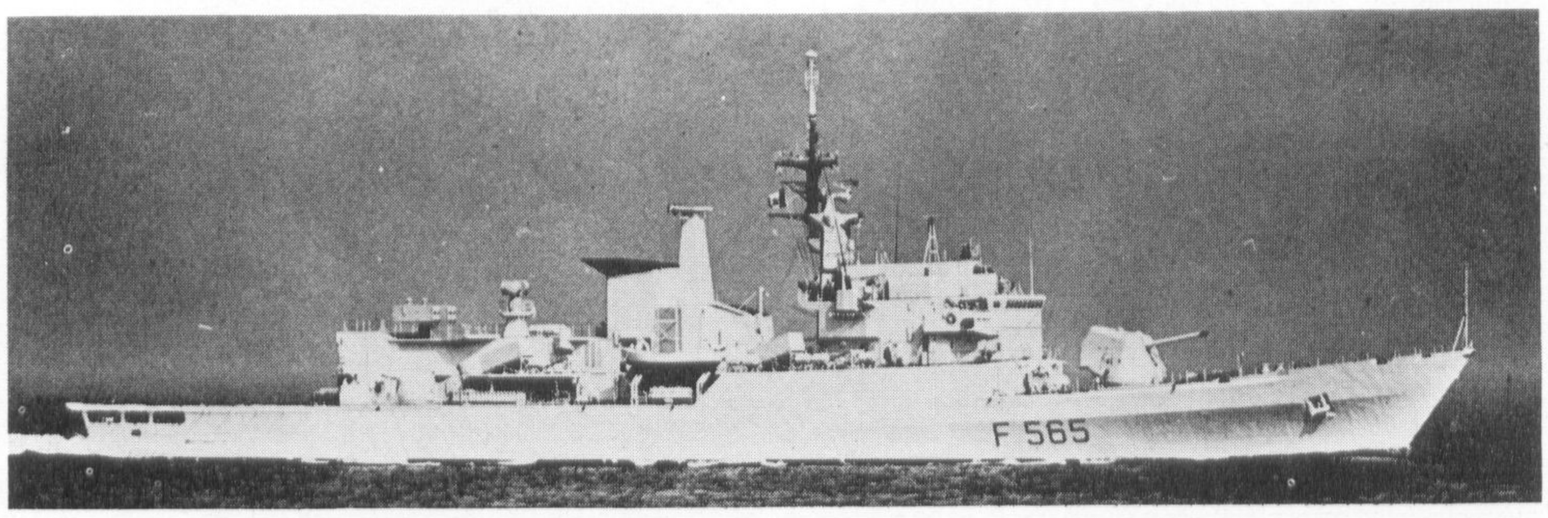
Rocket launchers: Fitted with two SCLAR.

Sonar: One Raytheon DE 1164 VDS.
One Raytheon DE 1160 hull-mounted.

4 "LUPO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
LUPO	F 564	Cantieri Navali Riuniti, Riva Trigoso	11 Oct 1974	29 July 1976	12 Sep 1977
SAGITTARIO	F 565	Cantieri Navali Riuniti, Riva Trigoso	4 Feb 1976	22 June 1977	18 Nov 1978
PERSEO	F 566	Cantieri Navali Riuniti, Riva Trigoso	28 Feb 1977	12 July 1978	1 Mar 1980
ORSA	F 567	Cantieri Navali Riuniti, Muggiano	1 Aug 1977	1 Mar 1979	1 Mar 1980

Displacement, tons: 2 208 standard; 2 500 full load
Dimensions, feet (metres): 371·3 × 37·1 × 12·1
(113·2 × 11·3 × 3·7)
Aircraft: AB 212 helicopter (see *Aircraft* note)
Missiles: SSM; 8 Otomat Mk 2 (single cells) with Teseo system; SAM; Nato Sea Sparrow (8 cell launcher) (see *Missile* note)
Guns: 1—5 in *(127 mm)*/54 (Compact); 4—40 mm/70 (twin Breda) (twin Dardo systems)
A/S weapons: 6 (2 triple) US Mk 32 torpedo tubes for Mk 46 torpedoes; helicopter torpedoes
Main engines: CODOG—2 Fiat LM 2 500 gas turbines; 50 000 hp; 2 GMT diesels; 7 800 hp; 2 shafts (cp propellers)
Speed, knots: 35 on turbines; 21 on diesels
Range, miles: 4 350 at 16 knots (diesels)
Complement: 185 (16 officers, 169 ratings)



SAGITTARIO

1980, Italian Navy

First of class named after the most famous Italian torpedo-boat of Second World War. Fitted with stabilisers.
The decision to build the "Maestrale" Class which is 50 ft longer and 5 ft wider in the beam suggests that the "Lupo" design was too tight and cramped, a defect to be found in other navies with the same problem of money saving.

Aircraft: Although two helicopters can be carried there is a telescopic hangar space for only one and normally only one will be carried.

Construction: 14 watertight compartments; fixed-fin stablisers; 90 days' endurance.

Electronics: Automatic command and control system IPN 10 (Selenia); ECM System (Elettronica); Telecommunications System (Elmer).

Foreign sales: Similar ships built for Peru and Venezuela.

Missiles: Budget permitting all ships are planned eventually to receive Albatros SAM system for Aspide missiles.

PERSEO

5/1980, Achille Rastelli

Radar: Air search: One MM/SPS 774.
Combined search: One RAN 10S system (Selenia).
Gun fire control: Orion 10X for each Dardo system.
Navigation: 3 RM 20.

SCLAR: Fitted with control and two launchers for SCLAR rockets; for details see *Vittorio Veneto.*

Sonar: One DE 1160B (Raytheon) hull-mounted set.

2 "ALPINO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ALPINO (ex-*Circe*)	F 580	Cantieri Navali Riuniti, Riva Trigoso	27 Feb 1963	10 June 1967	14 Jan 1968
CARABINIERE (ex-*Climene*)	F 581	Cantieri Navali Riuniti, Riva Trigoso	9 Jan 1965	30 Sep 1967	28 Apr 1968

Displacement, tons: 2 700 full load
Dimensions, feet (metres): 371·7 × 43·6 × 12·7
(113·3 × 13·3 × 3·9)
Aircraft: 2 AB-212 helicopters
Guns: 6—3 in *(76 mm)*/62 (single MM 1)
A/S weapons: 1 single semi-automatic depth charge mortar Mk 113; 6 (2 triple) Mk 32 A/S torpedo tubes; helicopter torpedoes
Main engines: 4 Tosi diesels; 16 800 hp; 2 Tosi Metrovick gas turbines; 15 000 hp; 2 shafts
Speed, knots: 22 (diesel), 29 (diesel and gas)
Oil fuel, tons: 275
Range, miles: 4 200 at 18 knots
Complement: 163 (13 officers, 150 men)

CARABINIERE

7/1980, Michael D. J. Lennon

The design is an improved version of that of the "Centauro" class combined with that of the "Bergamini" class. Fitted with stabilisers.

Gunnery: MAD gunfire control aerial fitted in *Alpino* 1975.

Radar: Combined search: One SPS 12.
Air/surface search/navigation: One SPQ 2.
Fire control: Three Orion radars in Elsag/Argo "O" control systems.
Radar intercept: MM/SPR A.

SCLAR: Fitted with control and launchers for SCLAR rockets; for details see *Vittorio Veneto.*

Sonar: One SQS 43; one SQA 10; VDS.

3 "BERGAMINI" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CARLO BERGAMINI	F 593	San Marco, CRDA Trieste	19 May 1959	16 June 1960	23 June 1962
VIRGINIO FASAN	F 594	Navalmeccanica, Castellammare	6 Mar 1960	9 Oct 1960	10 Oct 1962
CARLO MARGOTTINI	F 595	Navalmeccanica, Castellammare	26 May 1957	12 June 1960	5 May 1962

Displacement, tons: 1 650 full load
Dimensions, feet (metres): 311·7 × 37·4 × 10·5
(95 × 11·4 × 3·2)
Aircraft: 1 helicopter
Guns: 2—3 in *(76 mm)*/62 (single)
A/S weapons: 1 single semi-automatic depth charge mortar Mk 113; 2 triple US Mk 32 for A/S torpedoes
Main engines: 4 diesels (Fiat in *Fasan* and *Margottini,* Tosi in *Bergamini*); 2 shafts; 16 000 bhp
Speed, knots: 24·5
Range, miles: 4 000 at 18 knots
Complement: 163 (13 officers, 150 men)

CARLO BERGAMINI

5/1974, Commander Aldo Fraccaroli

Modernisation: A slightly enlarged helicopter platform was fitted and a telescopic hangar shipped to allow for embarkation of one AB-204B helicopter. The after 3-in gun was removed. *Carlo Margottini,* 1968; *Virginio Fasan,* 1969; *Carlo Bergamini,* 1970.

Radar: Combined search: One SPS 12.
Air/surface search/navigation: One SPQ 2.
Fire control: One Orion 3 for OG3 FCS.
Radar intercept: MM/SPR A.

Roll damping: Two Denny-Brown stabilisers reduce roll in heavy seas from 20 to 5 degrees.

Sonar: One SQS 40.

3 "CENTAURO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CANOPO	F 551 (ex-*D 570*)	Cantieri Navali di Taranto	15 May 1952	20 Feb 1955	1 Apr 1958
CENTAURO	F 554 (ex-*D 571*)	Ansaldo, Leghorn	31 May 1952	4 Apr 1954	5 May 1957
CIGNO	F 555 (ex-*D 572*)	Cantieri Navali di Taranto	10 Feb 1954	20 Mar 1955	7 Mar 1957

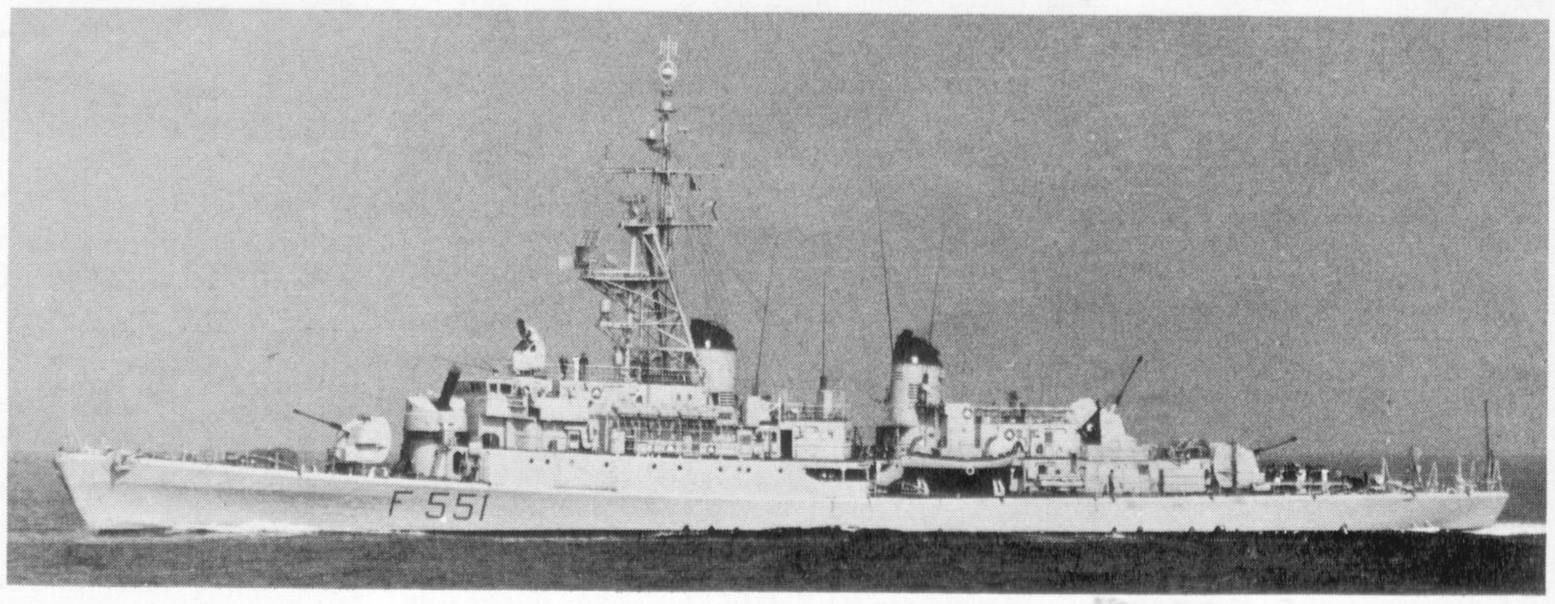
Displacement, tons: 1 807 standard; 2 250 full load
Dimensions, feet (metres): 338·4 × 39·5 × 12·6 *(103·1 × 12 × 3·8)*
Guns: 3—3 in *(76 mm)*/62 (single MM 1)
A/S weapons: 1—3-barrelled depth charge mortar; 2 triple US Mk 32 A/S torpedo tubes
Main engines: 2 double reduction geared turbines 2 shafts; 22 000 shp
Boilers: 2 Foster-Wheeler (Ansaldo); 626 psi *(44 kg/cm²)* working pressure; 842°F *(450°C)* superheat temperature
Speed, knots: 25
Oil fuel, tons: 360
Range, miles: 3 660 at 20 knots
Complement: 207 (12 officers, 195 men)

Built to Italian plans and specifications under the US off-shore programme.

Conversion: Carried out as follows: *Canopo*—1968-69, *Centauro*—1970-71, *Cigno*—1972-73. This provided the new 3-in *(76 mm)* armament.

Radar: Search: One SPS 6.
Combined search and navigation: One SMA/SPQ 2.
Fire control: One Orion 3 for OG3 FCS.
Radar Intercept: MM/SPR A.

Sonar: One SQS 11; one SQS 36.



9/1980, Commander Aldo Fraccaroli

CORVETTES

Note: A new class of six 1 000 ton corvettes is in the planning stage.

4 "DE CRISTOFARO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PIETRO DE CRISTOFARO	F 540	Cantieri Navali Riuniti, Riva Trigoso	30 Apr 1963	29 May 1965	19 Dec 1965
UMBERTO GROSSO	F 541	Cantieri Ansaldo, Leghorn	21 Oct 1962	12 Dec 1964	25 Apr 1966
LICIO VISINTINI	F 546	CRDA Monfalcone	30 Sep 1963	30 May 1965	25 Aug 1966
SALVATORE TODARO	F 550	Cantieri Ansaldo, Leghorn	21 Oct 1962	24 Oct 1964	25 Apr 1966

Displacement, tons: 850 standard; 1 020 full load
Dimensions, feet (metres): 263·2 × 33·7 × 9 *(80·2 × 10·3 × 2·7)*
Guns: 2—3 in *(76 mm)*/62 (single MM 1)
A/S weapons: 1 single semi-automatic DC mortar; 2 triple US Mk 32 A/S torpedo tubes
Main engines: 2 Fiat 3012 RSS diesels = 8 400 bhp; 2 shafts
Speed, knots: 23·5
Oil fuel, tons: 100
Range, miles: 4 000 at 18 knots
Complement: 131 (8 officers, 123 men)

The design is an improved version of the "Albatros" class.

Radar: Combined search: One SMA/SPQ 2.
Fire control: One Orion 3 for OG3 FCS.

Sonar: ELSAG DLB-1 fire control system.
SQS 36 (hull-mounted and VDS).

LICIO VISINTINI

6/1975, Dr. Giorgio Arra

4 "ALBATROS" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
AQUILA	F 542	Breda Marghera, Mestre, Venice	25 July 1953	31 July 1954	2 Oct 1956
ALBATROS	F 543	Navalmeccanica, Castellammare	1953	18 July 1954	1 June 1955
ALCIONE	F 544	Navalmeccanica, Castellammare	1953	19 Sep 1954	23 Oct 1955
AIRONE	F 545	Navalmeccanica, Castellammare	1953	21 Nov 1954	29 Dec 1955

Displacement, tons: 800 standard; 950 full load
Dimensions, feet (metres): 250·3 × 31·5 × 9·2 *(76·3 × 9·6 × 2·8)*
Guns: 2—40 mm/70 Bofors (see *Gunnery* notes)
A/S weapons: 2 Hedgehogs Mk II; 2 DCTs; 1 DC rack; 6 (2 triple) US Mk 32 A/S torpedo tubes
Main engines: 2 Fiat diesels; 2 shafts; 5 200 bhp
Speed, knots: 19
Oil fuel, tons: 100
Range, miles: 3 000 at 18 knots
Complement: 99

Eight ships of this class were built in Italy under US offshore MDAP orders; three for Italy, four for Denmark and one for the Netherlands. *Aquila* was transferred to the Italian Navy on 18 October 1961 at Den Helder from the Netherlands navy.

Gunnery: The two 3-in *(76 mm)* guns originally mounted, one forward and one aft, were replaced by two 40 mm guns in 1963.

Radar: Combined search and navigation: One SMA/SPQ 2.

Sonar: One QCU 2.

ALBATROS

6/1980, Achille Rastelli

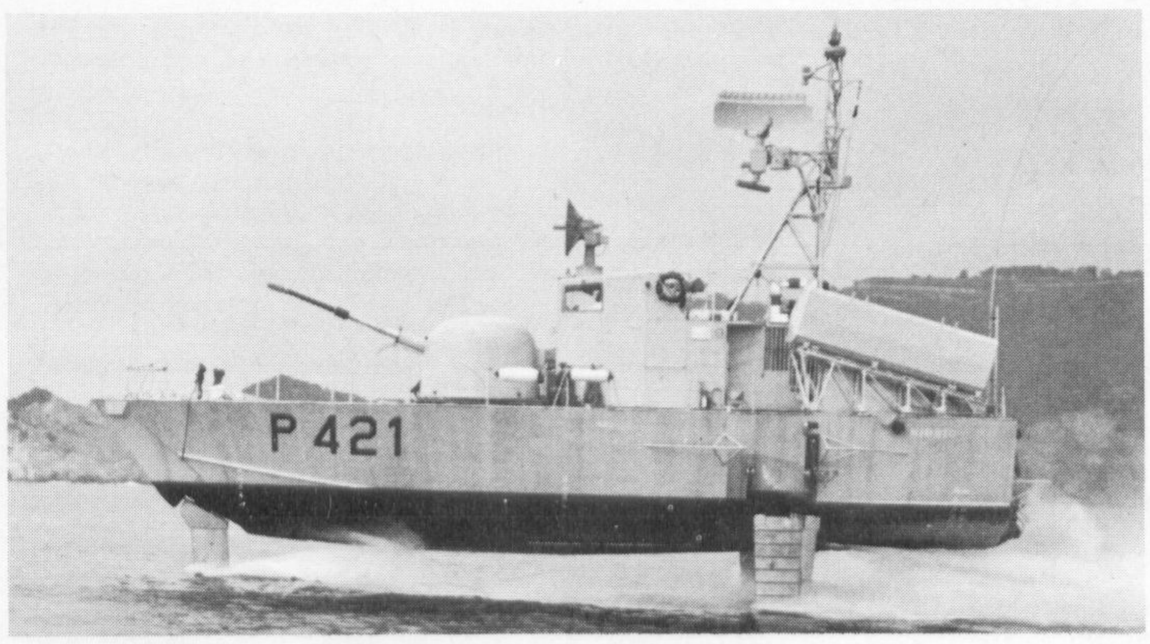
LIGHT FORCES

4 + 3 "SPARVIERO" CLASS (HYDROFOIL—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
SPARVIERO	P 420	Alinavi, La Spezia	15 July 1974
NIBBIO	P 421	Cantieri Navale Riuniti, Muggiano	10 Nov 1980
FALCONE	P 422	Cantieri Navale Riuniti, Muggiano	1981
ASTORE	P 423	Cantieri Navale Riuniti, Muggiano	1981
GRIFONE	P 424	Cantieri Navale Riuniti, Muggiano	1982
GHEPPIO	P 425	Cantieri Navale Riuniti, Muggiano	1982
CONDOR	P 426	Cantieri Navale Riuniti, Muggiano	1982

Displacement, tons: 62·5
Dimensions, feet (metres): 80·7 × 39·7 × 14·4 *(24·6 × 12·1 × 4·4)* (length and beam foils extended, draught hullborne); 75·4 × 22·9 × 5·2 *(23 × 7 × 1·6)* (hull size)
Missiles: SSM; Two Otomat (single cells) *(Sparviero)*; Otomat Mk 2 with Teseo system (remainder)
Gun: 1—76 mm/62 (Compact)
Main engines: Proteus gas turbine driving waterjet pump; 4 500 bhp; 160 bhp diesel and retractable propeller unit for hullborne propulsion
Speed, knots: 50 max, 42 cruising (sea state 4); 8 hullborne on diesels
Range, miles: 400 at 45 knots; 1 200 at 8 knots
Complement: 10 (2 officers, 8 men)

Sparviero completed for trials 9 May 1973, *Nibbio* April 1980. *Falcone* laid down May 1977. Missiles made by OTO Melara/Matra. Fitted with Elsag NA-10 Mod 1 fire control system with Orion RTN-10X radar. *Sparviero* delivered to the Navy as class prototype on 15 July 1974. Eight more hydrofoils planned of this class although only six so far ordered. Construction transferred from Alinavi, La Spezia to CNR.



NIBBIO *10/1980, CNR*

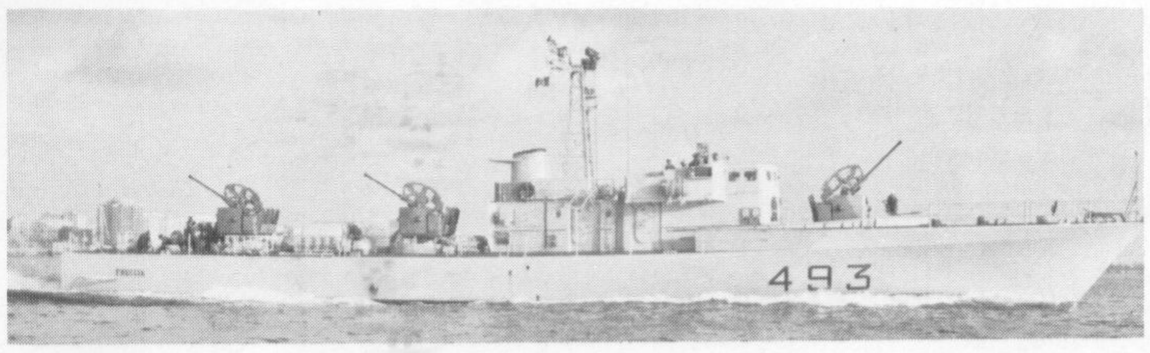
2 "FRECCIA" CLASS (FAST ATTACK CRAFT—CONVERTIBLE)

Name	*No.*	*Builders*	*Commissioned*
FRECCIA (ex-*MC 590*)	P 493	Cantieri Navali Riuniti, Riva Trigoso	6 July 1965
SAETTA (ex-*MC 591*)	P 494	CRDA, Monfalcone	25 Apr 1966

Displacement, tons: 188 standard; 205 full load
Dimensions, feet (metres): 150 × 23·8 × 5·5 *(45·8 × 7·3 × 1·7)*
Guns: *As Gunboat:* 3—40 mm/70 or 2—40 mm/70. *As Fast Minelayer:* 1—40 mm with 8 mines. *As Torpedo Boat:* 4—40 mm/70
Torpedo tubes: *As Torpedo Boat:* 4—21 in *(533 mm)*
Main engines: 2 Fiat diesels; 7 600 bhp; 1 Bristol Siddeley Proteus gas turbine, 4 250 shp; cp propellers = 40 knots
Range, miles: 800 at 27 knots
Complement: 37 (4 officers, 33 men)

Freccia was laid down on 30 April 1963 and launched on 9 January 1965. *Saetta* was laid down on 11 June 1963, launched on 11 April 1965. Can be converted in 24 hours to gunboat, torpedo boat, fast minelayer or missile boat. Fitted with E band navigation and tactical radar. *Saetta* has been armed with Sea Killer Mk 1 system with 5 tube trainable launcher.

Fire control: *Freccia:* US Mk 51 optical FCS. *Saetta:* RTN 150 radar with TV camera on top for Contraves GFCS.



FRECCIA *1974, Italian Navy*

2 "LAMPO" CLASS (FAST ATTACK CRAFT—CONVERTIBLE)

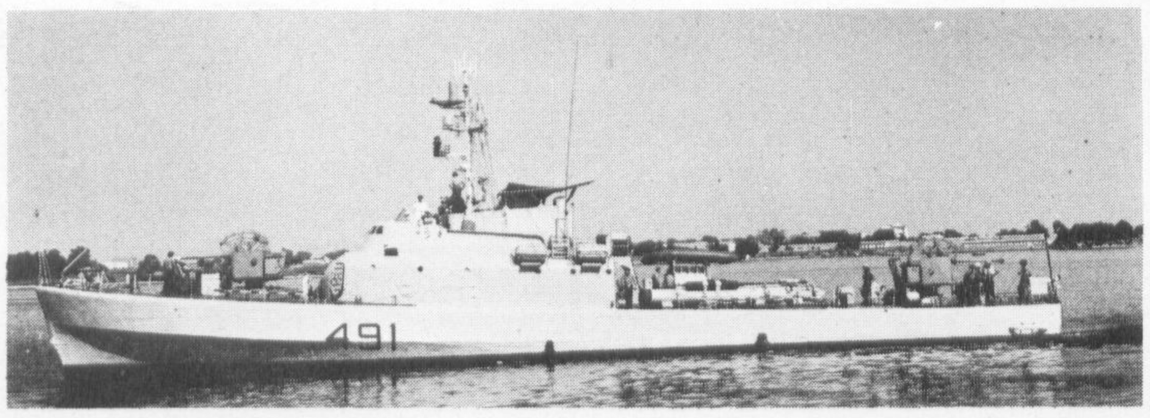
Name	*No.*	*Builders*	*Commissioned*
LAMPO (ex-*MC 491*)	P 491	Arsenale MM, Taranto	July 1963
BALENO (ex-*MC 492*)	P 492	Arsenale MM, Taranto	16 July 1965

Displacement, tons: 170 standard; 196 full load
Dimensions, feet (metres): 131·5 × 21 × 5 *(40·1 × 6·4 × 1·5)*
Guns: *As Gunboat:* 3—40 mm/70 or 2—40 mm/70; *As Torpedo Boat:* 2—40 mm/70
Torpedo tubes: *As Torpedo Boat:* 2—21 in *(533 mm)*
Main engines: 2 MTU 518-D diesels; 1 Metrovick gas turbine; 3 shafts; total 11 700 hp = 39 knots
Complement: 33 (5 officers, 28 men)

Convertible gunboats. *Lampo* was laid down on 4 January 1958 and launched on 22 November 1960. *Baleno* was laid-down on the same slip to an improved design on 22 November 1960, launched on 10 May 1964. Both fitted with new diesels in 1976.

Fire control: US Mk 51 optical for guns.

Radar: 3 ST 7-250.



LAMPO *6/1980, Achille Rastelli*

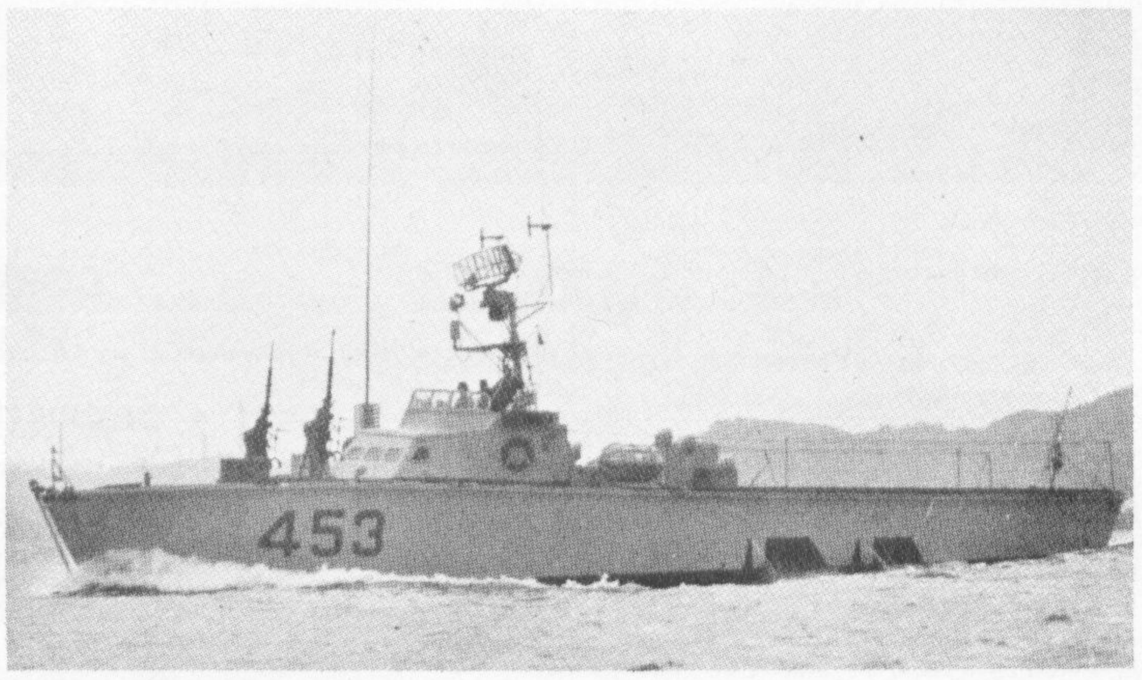
3 Ex-US "HIGGINS" CLASS (FAST PATROL CRAFT)

MS 441 (ex-GIS 841) **MS 443** (ex-GIS 843) **MS 453** (ex-GIS 853)

Displacement, tons: 64 full load
Dimensions, feet (metres): 78 × 20 × 6 *(23·8 × 6·1 × 1·8)*
Guns: 3—20 mm/70
Main engines: 3 CRM ASM 185 petrol motors; 3 shafts; 4 500 bhp = 34 knots
Range, miles: 1 000 at 20 knots
Complement: 11 (1 officer, 10 men)

Commissioned March 1948.
MS 441 and 453 converted for frogmen support. Refitted in Italy in 1949-53.

Radar: One SPS 21.



M 453 (modified for frogmen support) *6/1975, Dr. Giorgio Arra*

AMPHIBIOUS FORCES

Note: A new 6 000 ton LPD is to be built under Legge Navale to act as training ship in addition to amphibious duties. Postponed for time being.

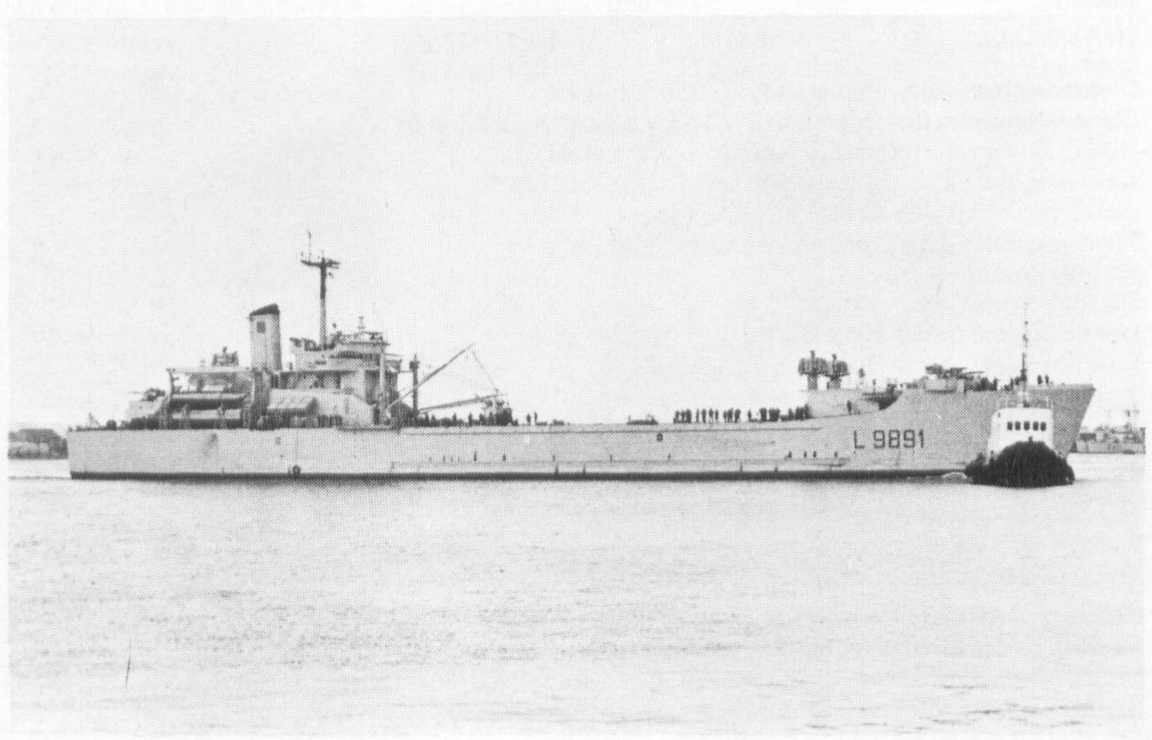
2 Ex-US "DE SOTO COUNTY" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
GRADO (ex-USS *De Soto County,* LST 1171)	L 9890	Avondale, New Orleans	1957
CAORLE (ex-USS *York County,* LST 1175)	L 9891	Newport News S.B. & D.D. Co	1957

Displacement, tons: 4 164 light; 8 000 full load
Dimensions, feet (metres): 444 × 62 × 16·5 *(133·4 × 18·9 × 5)*
Guns: 6—3 in *(76 mm)* (twins)
Main engines: 6 Fairbanks-Morse diesels; 14 400 shp; 2 shafts; (cp propellers) = 17·5 knots
Range, miles: 16 500 at 13 knots
Complement: 165 (10 officers, 155 men)
Troops: Approx 575

Both completed 1957 and transferred 17 July 1972.

Radar: One 3 RM 20.



CAORLE *10/1980, L. and L. van Ginderen*

1 Ex-US "KENNETH WHITING" CLASS (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
ANDREA BAFILE (ex-USS *St. George,* AV 16)	L 9871 (ex-A5314)	Todd Pacfic S.Y.	24 July 1944

Displacement, tons: 8 510 standard; 14 000 full load
Dimensions, feet (metres): 534·6 × 75·4 × 27·9 *(163 × 23 × 8·5)*
Aircraft: 1 or 2 helicopters
Guns: 2—5 in/38
Main engines: Allis-Chalmers geared turbines; 1 shaft; 8 500 shp = 17 knots
Boilers: 2 Foster-Wheeler
Range, miles: 13 400 at 13 knots
Complement: 58 (10 officers, 48 men)

Former US Navy seaplane tender, launched on 14 February 1944. Purchased and commissioned in the Italian Navy on 11 December 1968 and modified. Depot ship for "Special Forces". In reserve at Taranto since 1976.

ANDREA BAFILE *9/1979, Achille Rastelli*

MINE WARFARE FORCES

0 + 4 + (6) NEW CONSTRUCTION (MINEHUNTERS/SWEEPERS)

***LERICI** M 5550	***SAPRI** M 5551	***MILAZZO** M 5552	***VIESTE** M 5553
GAETA	**TERMOLI**	**ALGHERO**	**NUMANA**
CROTONE	**VIAREGGIO**		

* ordered

Displacement, tons: 470 standard; 502 full load
Dimensions, feet (metres): 163·7 × 31·5 × 8·6 *(49·9 × 9·6 × 2·6)*
Gun: 1—20 mm
Main engines: Passage—1 GMT 230B 8-cyl diesel; 1 840 hp = 15 knots;
Hunting—Hydraulic thrust jets = 0 to 7 knots
Range, miles: 2 500 at 12 knots (see note)
Endurance: 10 days
Complement: 40

First four ordered 7 January 1978 under Legge Navale from Intermarine, Sazana. *Lerici* laid down 1978 for completion 1981. Next three following at six month intervals. Next six currently postponed.

Construction: Of heavy GRP throughout hull, decks and bulkheads, with frames eliminated.

Electrics: 440 volt, 60-cyl 3 phase AC.

Engineering: All machinery is mounted on vibration dampers.

Minehunting: CGE-Fiart SQQ 14 minehunting sonar; SMA navigation system with data processing; two PAP 104 underwater detection/destruction vehicles; diving equipment and recompression chamber.

Minesweeping: Oropesa wire sweep.

Range: For long passages passive roll-stabilising tanks can be used for extra fuel.

Radar: SMA 3 ST 7.

Sonar: CGE-Fiart SQQ 14 VDS (lowered from keel forward of bridge).

NEW CONSTRUCTION *1976, Intermarine*

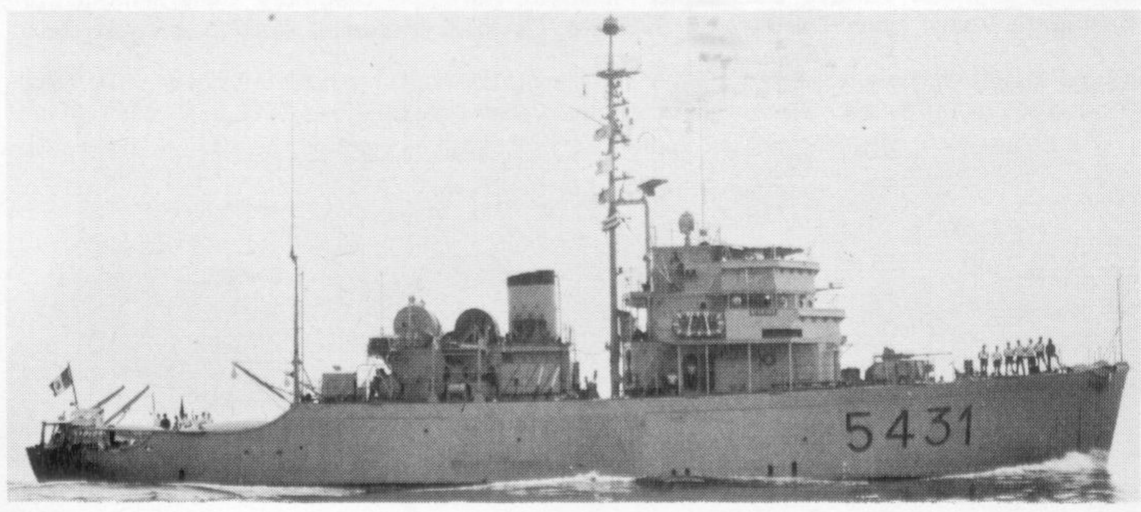
4 Ex-US "AGGRESSIVE" CLASS (MINESWEEPERS—OCEAN)

Name	*No.*	*Builders*	*Commissioned*
SALMONE (ex-*MSO 507*)	M 5430	Martinolich S.B. Co	15 June 1956
STORIONE (ex-*MSO 506*)	M 5431	Martinolich S.B. Co	23 Feb 1956
SGOMBRO (ex-*MSO 517*)	M 5432	Tampa Marine Co	12 May 1957
SQUALO (ex-*MSO 518*)	M 5433	Tampa Marine Co	20 June 1957

Displacement, tons: 665 standard; 720 full load
Dimensions, feet (metres): 172 × 36 × 13·6 *(52·4 × 11 × 4·1)*
Gun: 1—40 mm/56
Main engines: 2 General Motors 8-278 ANW diesels; 2 shafts; 1 520 bhp = 14 knots
Oil fuel, tons: 46
Range, miles: 2 400 at 10 knots
Complement: 51 (7 officers, 44 men)

Wooden hulls and non-magnetic diesels of stainless steel alloy. Cp propellers. *Storione,* launched on 13 November 1954, *Salmone,* launched on 19 February 1955 transferred at San Diego, on 17 June 1956.

Radar: One 3 ST 7/DG.



STORIONE *6/1976, Dr. Giorgio Arra*

10 Ex-US "ADJUTANT" CLASS

(MINESWEEPERS/HUNTERS—COASTAL)

CASTAGNO M 5504	**LARICE** M 5510	**PLATANO** M 5516
CEDRO M 5505	**NOCE** M 5511	**QUERCIA** M 5517
FRASSINO M 5508	**OLMO** M 5512	**MANDORLO** M 5519
GELSO M 5509		

Displacement, tons: 378 standard; *(Mandorlo* 360); 390 full load
Dimensions, feet (metres): 144 × 27·9 × 8 *(43·9 × 8·5 × 2·4)*
Gun: 1—40 mm
Main engines: 2 diesels; 2 shafts; 1 200 bhp = 13·5 knots
Oil fuel, tons: 28
Range, miles: 3 000 at 10 knots
Complement: 31 (2 officers, 29 men)

Wooden hulled and constructed throughout of anti-magnetic materials. All commissioned August 1953-December 1954 and transferred by the USA in 1953-54. Originally class of 18. *Pioppo* used for surveying.

Minehunting conversion: *Mandorlo* completed 1978, *Platano* in November 1978, *Cedro* converted 1979-80. Four more of this class and the "Agave" class are to be similarly converted—all to complete by end 1981.

Builders: *Castagno* (Grebe, Chicago), *Cedro* (Berg S.Y.), *Frassino* (Blaine), *Gelso* (Grebe, Chicago), *Larice* (Lake Union Co), *Noce* (Bellingham S.Y.), *Olmo* (Bellingham S.Y.), *Mandorlo, Platano* and *Quercia* (Bellingham S.Y.).

NOCE *1979, L. and L. van Ginderen*

15 "AGAVE" CLASS (MINESWEEPERS—COASTAL)

BAMBU M 5521
EBANO M 5522
MANGO M 5523
MOGANO M 5524
PALMA M 5525
SANDALO M 5527
AGAVE M 5531
ALLORO M 5532
EDERA M 5533
GELSOMINO M 5535
GIAGGIOLO M 5536
LOTO M 5538
TIMO M 5540
TRIFOGLIO M 5541
VISCHIO M 5542

Displacement, tons: 375 standard; 405 full load
Dimensions, feet (metres): 144 × 25·6 × 8·5 *(43 × 7·8 × 2·6)*
Guns: 2—20 mm/70 (twin)
Main engines: 2 diesels; 2 shafts; 1 200 bhp = 13·5 knots
Oil fuel, tons: 25
Range, miles: 2 500 at 10 knots
Complement: 38 (5 officers, 33 men)

Non-magnetic minesweepers of composite wooden and alloy construction similar to those transferred from the USA but built in Italian yards; all completed November 1956-April 1957. Originally class of 19. *Mirto* now used for surveying.

Minehunting conversion: *Loto* completed March 1979. (See similar note for "Adjutant" class above.)

Builders: CRDA Monfalcone: *Agave, Alloro, Edera, Bambu, Ebano, Mango, Mogano, Palma, Sandalo.* Baglietto, Varazze: *Gelsomino.* Picchiotti, Viareggio: *Giaggiolo.* Celli, Venezia: *Loto.* Costaguta, Voltri: *Timo.* CN, Taranto: *Trifoglio.* Cant. Mediterraneo: *Vischio.*

Radar: One 3 ST 7/DG.

ALLORO *11/1978, Commander Aldo Fraccaroli*

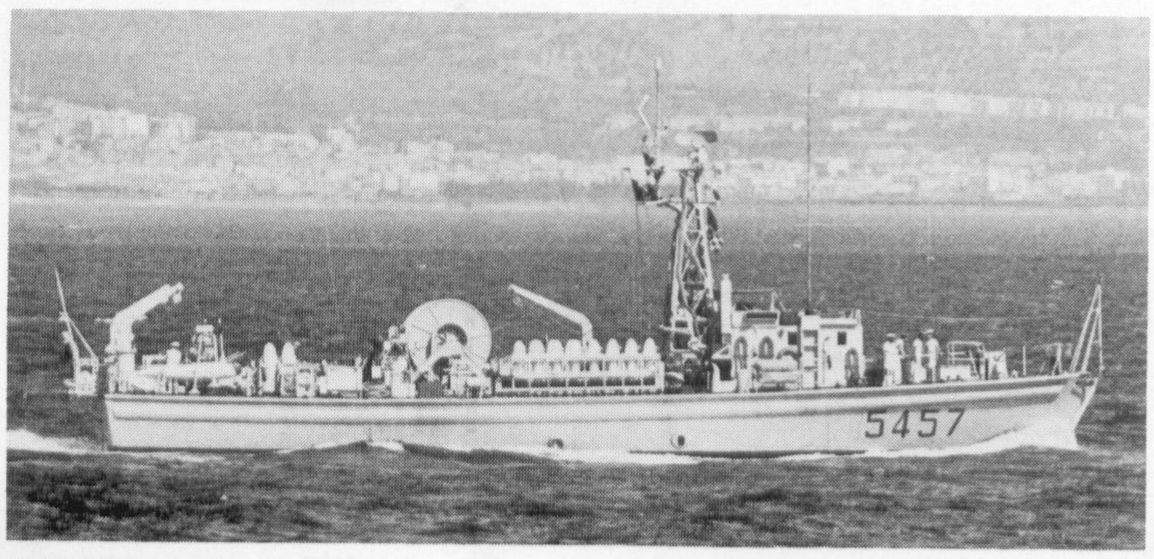
5 "ARAGOSTA" CLASS (MINESWEEPERS—INSHORE)

ARAGOSTA M 5450
ASTICE M 5452
MITILO M 5459
POLIPO M 5463
PORPORA M 5464

Displacement, tons: 188 full load
Dimensions, feet (metres): 106 × 21 × 6 *(32·5 × 6·4 × 1·8)*
Main engines: 2 diesels; 1 000 bhp = 14 knots
Oil fuel, tons: 15
Range, miles: 2 000 at 9 knots
Complement: 16 (4 officers, 12 men)

Similar to the British "Ham" class. All constructed to the order of NATO in 1955-57. Designed armament of one 20 mm gun not mounted. Originally class of 20.
Aragosta has large deck-house aft as support ship for frogmen.

Builders: CRDA Monfalcone: *Aragosta, Astice.* Picchiotti, Viareggio: *Mitilo.* Costaguta, Voltri: *Polipo, Porpora.*



"ARAGOSTA" Class *1978, Commander Aldo Fraccaroli*

SURVEY VESSELS

Name	*No.*	*Builders*	*Commissioned*
AMMIRAGLIO MAGNAGHI	A 5303	Cantieri Navali Riuniti, Riva Trigoso	2 May 1975

Displacement, tons: 1 700
Dimensions, feet (metres): 271·3 × 44·9 × 11·5 *(82·7 × 13·7 × 3·5)*
Aircraft: 1—AB 204 helicopter
Gun: 1—40 mm
Main engines: 2 General Motors B 306 SS diesels = 3 000 hp; 1 shaft (cp propeller); auxiliary electric motor; 240 hp = 4 knots
Speed, knots: 16
Range, miles: 6 000 at 12 knots (1 diesel); 4 200 at 16 knots (2 diesels)
Complement: 148 (14 officers, 15 scientists, 119 men)

Ordered under 1972 programme. Laid down 13 June 1973. Launched 11 October 1974. Fitted with flight-deck and hangar, bow thruster, full air-conditioning, bridge engine controls, flume-type stabilisers and fully equipped for oceanographical studies.

Radar: Two RM 20.

AMMIRAGLIO MAGNAGHI *5/1980, Achille Rastelli*

Name	*No.*	*Builders*	*Commissioned*
MIRTO	A 5306	Breda, Porta Marghera	4 Aug 1956
PIOPPO	A 5307	Bellingham S.Y., Seattle	31 July 1954

Mirto of the "Agave" class and *Pioppo* of the "Adjutant" class (see *Mine Warfare* section for details) have been converted for surveying duties with complement of four officers and 36 men.

MIRTO *1980, L. and L. van Ginderen*

SERVICE FORCES

2 REPLENISHMENT TANKERS

Name	*No.*	*Builders*	*Commissioned*
STROMBOLI	A 5327	Cantieri Navali Riuniti, Riva Trigoso	20 Nov 1975
VESUVIO	A 5329	Cantieri Navali Riuniti, Muggiano	18 Nov 1978

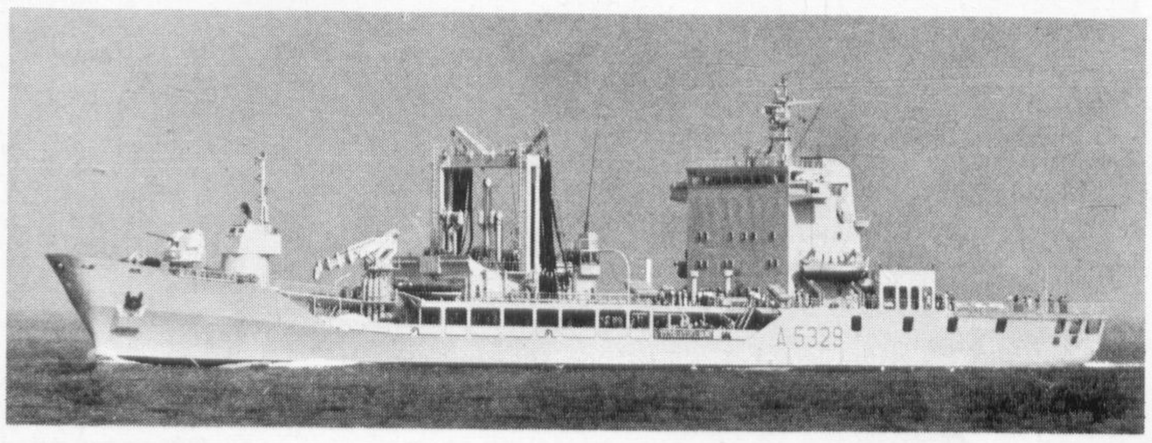
Displacement, tons: 3 556 light; 8 706 full load
Dimensions, feet (metres): 423·1 × 59 × 21·3 *(129 × 18 × 6·5)*
Guns: 1—76 mm/62 (Compact); 2—40 mm
Main engines: 2 Fiat diesels C428 SS; 11 400 hp; 1 shaft; 4-bladed Lips cp propeller
Speed, knots: 20
Range, miles: 4 900 at 19 knots
Complement: 115 (9 officers, 106 men)

Stromboli laid down on 1 October 1973. Launched 20 February 1975. *Vesuvio* ordered August 1976 and launched 4 June 1977. *Vesuvio* is the first large ship to be built at Muggiano (near La Spezia) since the war and the first with funds under Legge Navale 1975.

Aircraft: Helicopter flight deck but no hangar.

Capacity: 3 000 tons FFO; 1 000 tons dieso, 400 tons JP5, 300 tons other stores.

Radar: Fire control: One Orion RTN 10X for Argo 10/Elsag NA 10 FCS.



VESUVIO *9/1980, Commander Aldo Fraccaroli*

2 EXPERIMENTAL SHIPS

Note: The A/S experimental ship *Maria Paolina* is operated by the NATO Centre for Anti-submarine Research at La Spezia but is not part of the Italian Navy.

Name	*No.*	*Builders*	*Commissioned*
QUARTO	A 5314	Taranto Naval Shipyard	1967

Displacement, tons: 764 standard; 980 full load
Dimensions, feet (metres): 226·4 × 31·3 × 6 *(69·1 × 9·5 × 1·8)*
Guns: 4—40 mm (2 twin)
Main engines: 3 diesels; 2 300 bhp = 13 knots
Range, miles: 1 300 at 13 knots

Laid down on 19 March 1966 and launched on 18 March 1967. Of the same size as LSMs. She is now being used as experimental ship for new weapon-systems trials and evaluation. Currently employed on Otomat trials with two launchers forward and requisite aerials on mast and bridge.

QUARTO (fitted for missile trials) *3/1980, Commander Aldo Fraccaroli*

BARBARA A 5315

Displacement, tons: 195
Dimensions, feet (metres): 98·4 × 20·7 × 4·9 *(30 × 6·3 × 1·5)*
Main engines: 2 diesels; 600 hp = 12 knots

A fishing vessel purchased and converted for research work in 1975.
Built by Castracani, Ancona.

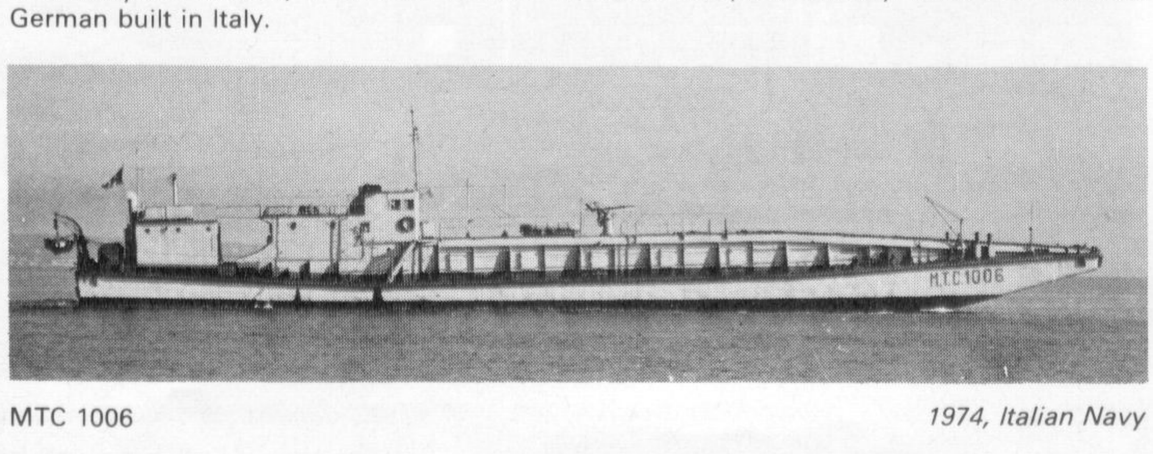
1 Ex-US "BARNEGAT" CLASS (SUPPORT SHIP)

Name	*No.*	*Builders*	*Commissioned*
PIETRO CAVEZZALE (ex-USS *Oyster Bay*, ex-AGP 6, AVP 28)	A 5301	Lake Washington Shipyard	1943

Displacement, tons: 1 766 standard; 2 800 full load
Dimensions, feet (metres): 310·8 × 41 × 13·5 *(94·7 × 12·5 × 3·7)*
Guns: 1—76 mm; 2—40 mm/56
Main engines: 2 sets Fairbanks-Morse 38 D8 1/8 diesels; 2 shafts; 6 080 bhp = 16 knots
Oil fuel, tons: 300
Range, miles: 10 000 at 11 knots
Complement: 114 (7 officers, 107 men)

Former US seaplane tender (subsequently motor torpedo boat tender). Launched on 7 September 1942. Transferred to the Italian Navy on 23 October 1957.

Radar: SPS 6 and Jason.



PIETRO CAVEZZALE *8/1979, Commander Aldo Fraccaroli*

8 Ex-WEST GERMAN MFP TYPE (COASTAL TRANSPORTS)

MTC 1004	**MTC 1006**	**MTC 1008**	**MTC 1010**
MTC 1005	**MTC 1007**	**MTC 1009**	**MTC 1101**

Displacement, tons: 240 standard
Dimensions, feet (metres): 164 × 21·3 × 5·7 *(50 × 6·5 × 1·7)*
Guns: 2 or 3—20 or 37 mm
Main engines: 2 or 3 diesels; 500 bhp = 10 knots
Complement: 19 (1 officer, 18 men)

Moti-Trasporti Costieri, MTC 1004 to 1010 are Italian MZ *(Motozattere)*. MTC 1101 ex-West German built in Italy.

MTC 1006 *1974, Italian Navy*

18 Ex-US LCM TYPE

MTM 9901	**MTM 9911**	**MTM 9915**	**MTM 9923**	**MTM 9927**
MTM 9902	**MTM 9912**	**MTM 9918**	**MTM 9924**	**MTM 9928**
MTM 9905	**MTM 9913**	**MTM 9919**	**MTM 9925**	
MTM 9909	**MTM 9914**	**MTM 9920**	**MTM 9926**	

Displacement, tons: 20 standard
Dimensions, feet (metres): 49·5 × 14·8 × 4·2 *(15·1 × 4·5 × 1·3)*
Guns: 2—20 mm
Main engines: Diesels; speed 11 knots

Built in 1943-44. Transferred 1952-53.

32 US LCVP TYPE

MTP 9703	**MTP 9729**	**MTP 9737**	**MTP 9744**	**MTP 9751**
MTP 9711	**MTP 9730**	**MTP 9738**	**MTP 9745**	**MTP 9752**
MTP 9715	**MTP 9732**	**MTP 9739**	**MTP 9746**	**MTP 9753**
MTP 9720	**MTP 9733**	**MTP 9740**	**MTP 9747**	**MTP 9754**
MTP 9723	**MTP 9734**	**MTP 9741**	**MTP 9748**	
MTP 9727	**MTP 9735**	**MTP 9742**	**MTP 9749**	
MTP 9728	**MTP 9736**	**MTP 9743**	**MTP 9750**	

Displacement, tons: 8 standard
Dimensions, feet (metres): 36·5 × 10·8 × 3 *(11·1 × 3·3 × 0·9)*
Guns: 2 MGs
Main engines: Diesels; speed 12 knots

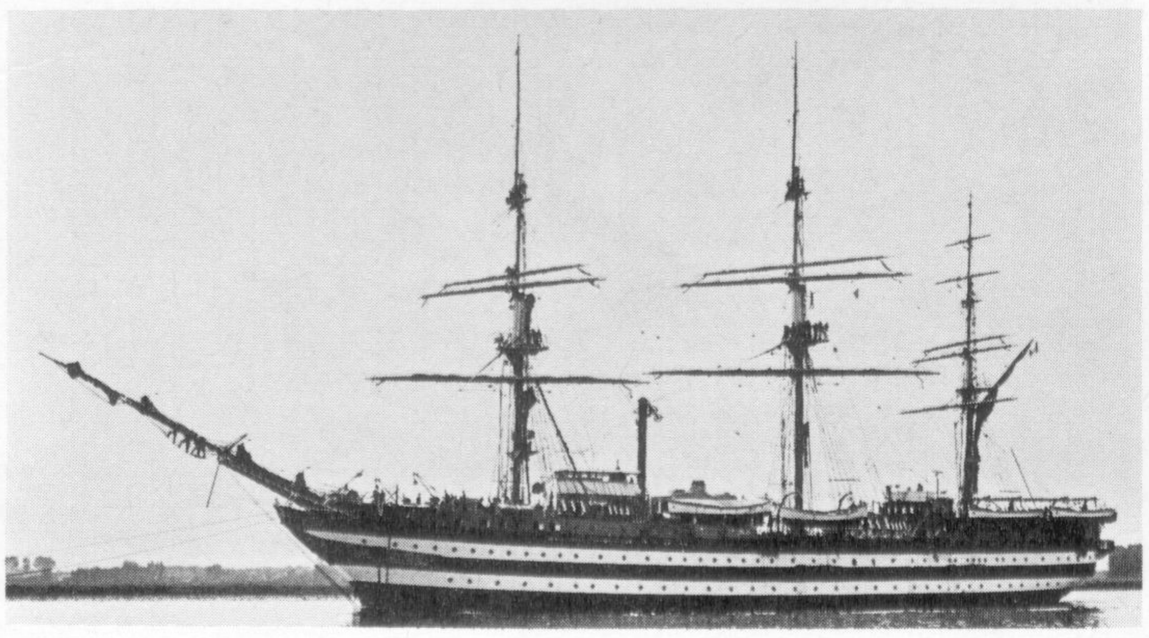
MTP 9703 to 9723 are former US landing craft of the LCVP type. Transferred 1952, 1956, 1965, 1970, 1972. MTP 9727 and following craft of similar characteristics are of Italian construction.

TRAINING SHIPS

Name	*No.*	*Builders*	*Commissioned*
AMERIGO VESPUCCI	A 5312	Castellammare	15 May 1931

Displacement, tons: 3 543 standard; 4 146 full load
Dimensions, feet (metres): 229·5 pp; 270 oa hull; 330 oa bowsprit × 51 × 22 *(70; 82·4; 100 × 15·5 × 7)*
Guns: 4—3 in/50; 1—20 mm
Main engines: 2 Fiat diesels with electric drive to 2 Marelli motors, 1 shaft; 2 000 hp = 10 knots
Sail area: 22 604 sq ft
Endurance: 5 450 miles at 6·5 knots
Complement: 243 (13 officers, 230 men)

Launched on 22 March 1930. Hull, masts and yards are of steel. Extensively refitted at La Spezia Naval Dockyard in 1964.

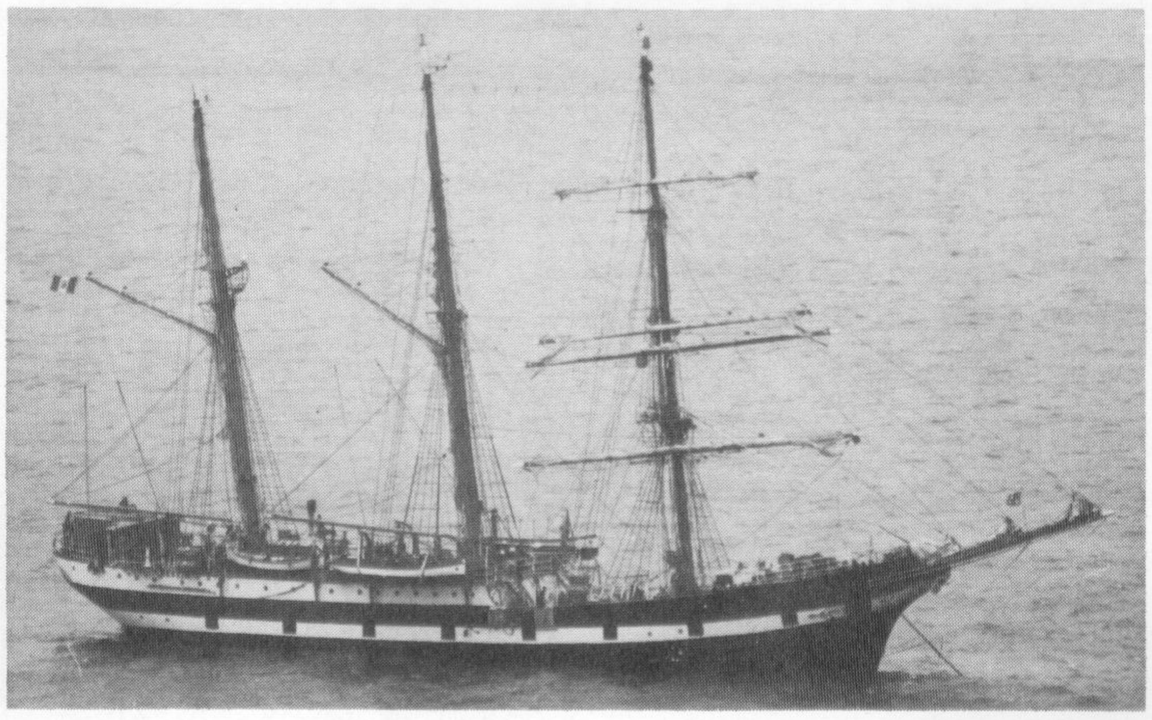


AMERIGO VESPUCCI *8/1979, Leo van Ginderen*

Name	*No.*	*Builders*	*Commissioned*
PALINURO (ex-*Commandant Louis Richard*)	A 5311	Ch. Dubigeon, Nantes	1934

Displacement, tons: 1 042 standard; 1 450 full load
Measurement, tons: 858 gross
Dimensions, feet (metres): 193·5 × 32·8 × 15·7 *(59 × 10 × 4·8)*
Main engine: 1 diesel; 1 shaft; 450 bhp = 7·5 knots
Endurance, miles: 5 390 at 7·5 knots
Sail area: 1 152 sq ft
Complement: 47

Barquentine launched in 1934. Purchased in 1951. Rebuilt in 1954-55 and commissioned in Italian Navy on 1 July 1955. She was one of the last two French Grand Bank cod-fishing barquentines. Owned by the Armement Glâtre she was based at St Malo until bought by Italy.



PALINURO *6/1978, Commander Aldo Fraccaroli*

Name	*No.*	*Builders*	*Commissioned*
CORSARO II	A 5316	Costaguta Yard, Voltri	6 Jan 1961

Measurement, tons: 47
Dimensions, feet (metres): 69 × 15·4 × 9·8 *(21 × 4·7 × 3)*
Sail area: 2 200 sq ft
Complement: 14 (12 officers, 2 men)

Special yacht for sail training and oceanic navigation. "RORC" class.

Name	*No.*	*Builders*	*Commissioned*
STELLA POLARE	A 5313	Sangermani, Chiavari	7 Oct 1965

Measurement, tons: 41
Dimensions, feet (metres): 68·6 × 15·4 × 9·5 *(20·9 × 4·7 × 2·9)*
Auxiliary engine: 1 Mercedes-Benz diesel, 96 bhp
Sail area: 2 117 sq ft
Complement: 14 (8 officers, 6 men)

Yawl rigged built as a sail training vessel for the Italian Navy.

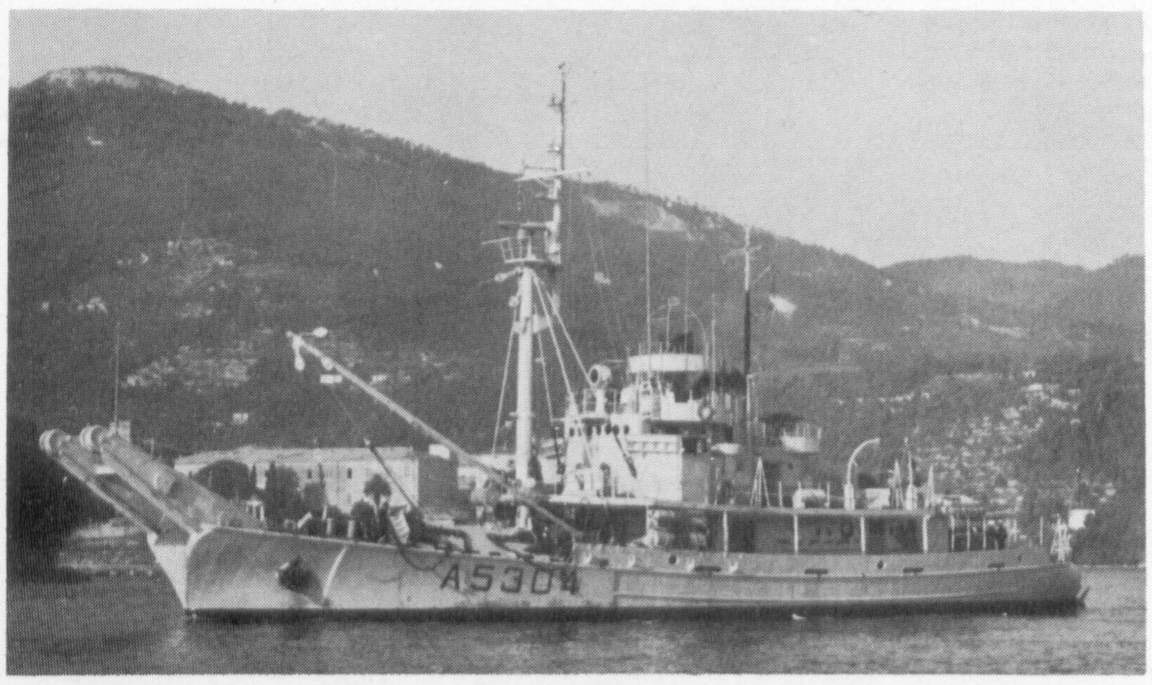
NETLAYER

1 "ALICUDI" CLASS

Name	*No.*	*Builders*	*Commissioned*
ALICUDI (ex-USS *AN 99*)	A 5304	Ansaldo, Leghorn	1955

Displacement, tons: 770 standard; 850 full load
Dimensions, feet (metres): 151·9 × 33·5 × 10·5 *(46·3 × 10·2 × 3·2)*
Guns: 1—40 mm/70; 4—20 mm/70
Main engines: Diesel-electric; 1 600 shp = 12 knots
Complement: 51 (5 officers, 46 men)

Built to the order of NATO. Laid down on 22 April 1954 and launched on 11 July 1954.



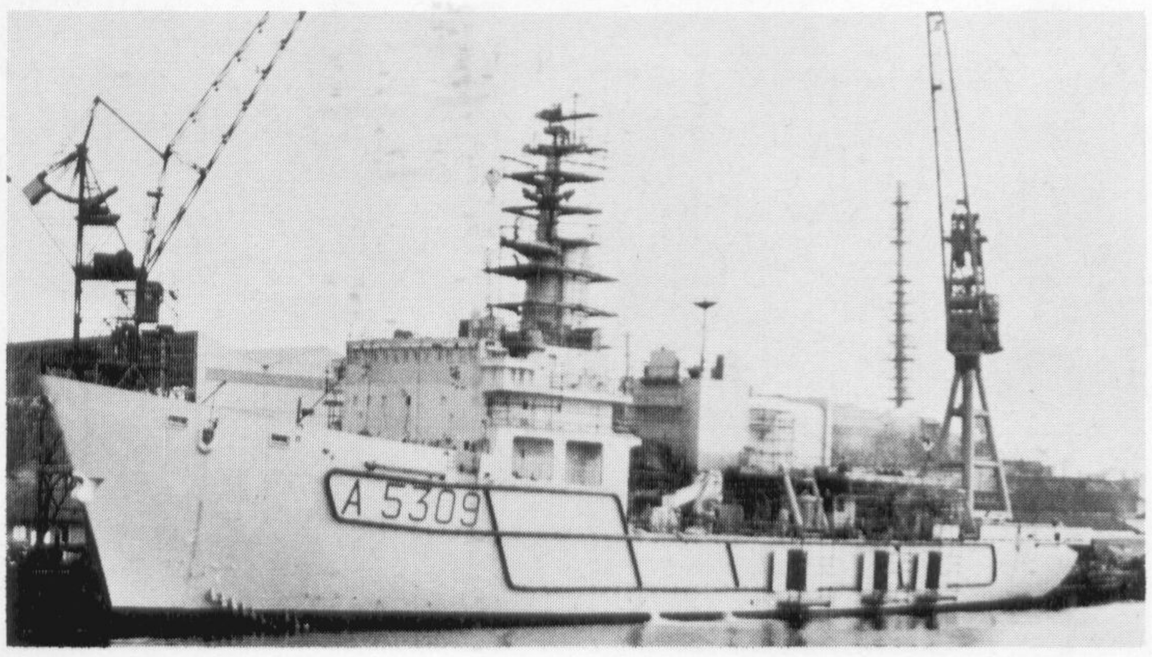
ALICUDI *11/1977, Commander Aldo Fraccaroli*

SALVAGE SHIPS

Name	*No.*	*Builders*	*Commissioned*
ANTEO	A 5309	C.N. Breda-Mestre	31 July 1980

Displacement, tons; 3 200
Dimensions, feet (metres): 322·8 × 51·8 × 16·7 *(98·4 × 15·8 × 5·1)*
Aircraft: 1 helicopter
Guns: 2—20 mm
Main engines: Diesel-electric; 3 Fiat GMT A-230 diesels; 8 100 hp; 1 electric motor; 4 000 hp
Speed, knots: 19
Range, miles: 4 000 at 14 knots
Complement: 121 (including salvage staff)

Comprehensively fitted with flight deck and hangar, extensive salvage gear, one DSRV to starboard, two LCVPs to port, two lifeboats under helicopter deck and one in chute aft. Three fire-fighting systems. Bow thruster. Full towing equipment. Carries midget submarine, *Usel,* of 13·2 tons dived with dimensions 26·2 × 6·2 × 8·9 ft *(8 × 1·9 × 2·7 m).* Speed 5 knots and carries two men.
Ordered mid-1977, launched 11 November 1978.

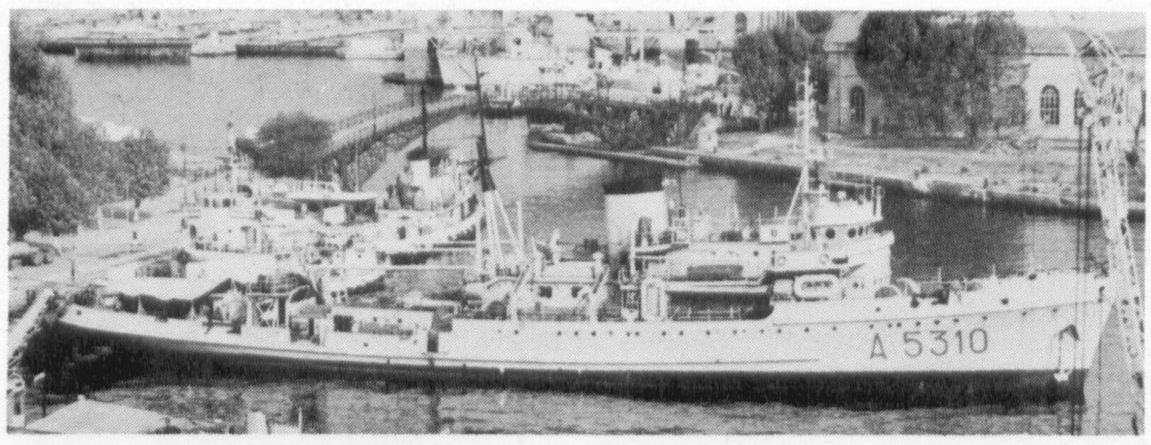


ANTEO *1/1980, Commander Aldo Fraccaroli*

Name	*No.*	*Builders*	*Commissioned*
PROTEO (ex-*Perseo*)	A 5310	Cantieri Navali Riuniti, Ancona	24 Aug 1951

Displacement, tons: 1 865 standard; 2 147 full load
Dimensions, feet (metres): 248 × 38 × 21 *(75·6 × 11·6 × 6·4)*
Guns: 3—20 mm
Main engines: 2 diesels; 4 800 bhp; single shaft = 16 knots
Range, miles: 7 500 at 13 knots
Complement: 130 (10 officers, 120 men)

Laid down at Cantieri Navali Riuniti, Ancona, in 1943. Suspended in 1944. Seized by Germans and transferred to Trieste. Construction re-started at Cantieri Navali Riuniti, Ancona, in 1949. Formerly mounted one 3·9-in gun and two 20 mm. To be relieved by *Anteo.*



PROTEO (with lengthened funnel) *11/1978, Commander Aldo Fraccaroli*

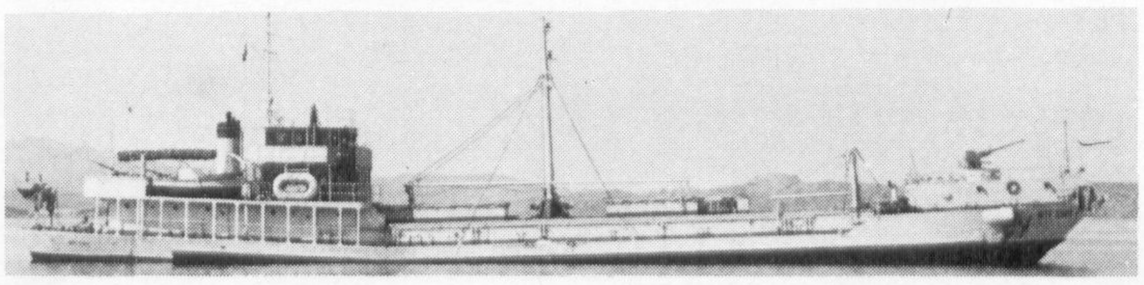
LIGHTHOUSE TENDERS

3 Ex-BRITISH LCT 3 TYPE

MTF 1301 A 5361 **MTF 1302** A 5362 **MTF 1303** A 5363

Displacement, tons: 296 light; 700 full load
Dimensions, feet (metres): 192 × 31 × 7 *(58·6 × 9·5 × 2·1)*
Guns: 1—40 mm/56; 2—20 mm/70
Main engine: Diesel; 1 shaft = 8 knots
Complement: 23 (3 officers, 20 men)

Converted to lighthouse stores transports.



MTF 1301 *1968, Italian Navy*

REPAIR CRAFT

7 Ex-BRITISH LCT 3 TYPE

MOC 1201 A 5331 **MOC 1203** A 5333 **MOC 1205** A 5335 **MOC 1208** A 5338
MOC 1202 A 5332 **MOC 1204** A 5334 **MOC 1207** A 5337

Displacement, tons: 350 standard; 640 full load
Dimensions, feet (metres): 192 × 31 × 7 *(58·6 × 9·5 × 2·1)*
Guns: 2—40 mm; 2—20 mm (2 ships have 2—40 mm and 1 ship has 3—20 mm)
Main engines: Diesel = 8 knots
Complement: 24 (3 officers, 21 men)

Originally converted as repair craft. Other duties have been taken over—MOC 1207 and 1208 are ammunition transports and MOC 1201 is used for torpedo trials.

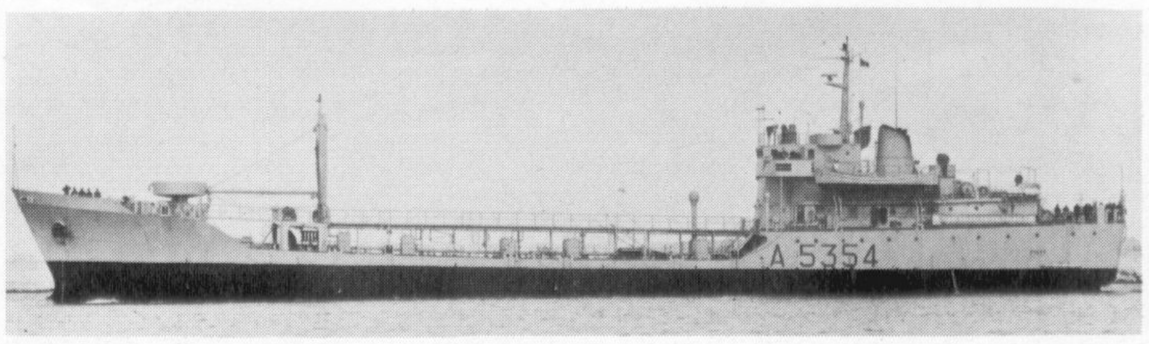
MOC 1208 *9/1980, Commander Aldo Fraccaroli*

WATER CARRIERS

PIAVE A 5354

4 973 tons full load—launched 1971 by Orlando (Livorno) and commissioned 23 May 1973. Complement 55 (7 officers, 48 men).

Guns: 4—40 mm (twins) (not mounted).

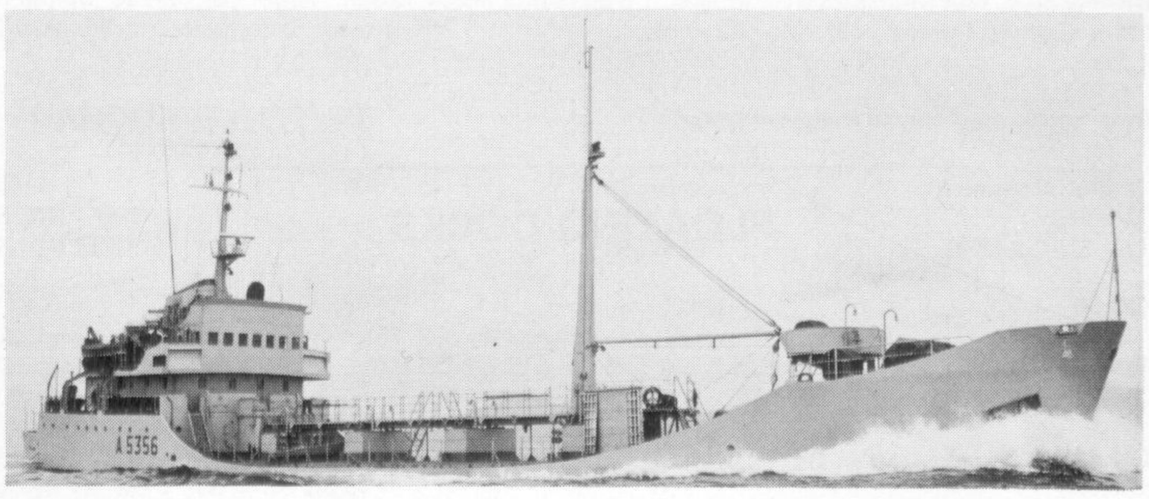


PIAVE *1977, J. A. Verhoog*

Name	*No.*	*Builders*	*Commissioned*
BASENTO	A 5356	Inma di La Spezia	1970
BRADANO	A 5357	Inma di La Spezia	1971
BRENTA	A 5358	Inma di La Spezia	1972

Displacement, tons: 1 914
Guns: 2—20 mm
Main engines: 2 Fiat diesels; 1 730 hp = 13 knots
Complement: 24 (3 officers, 21 men)

Laid down in 1969-70.



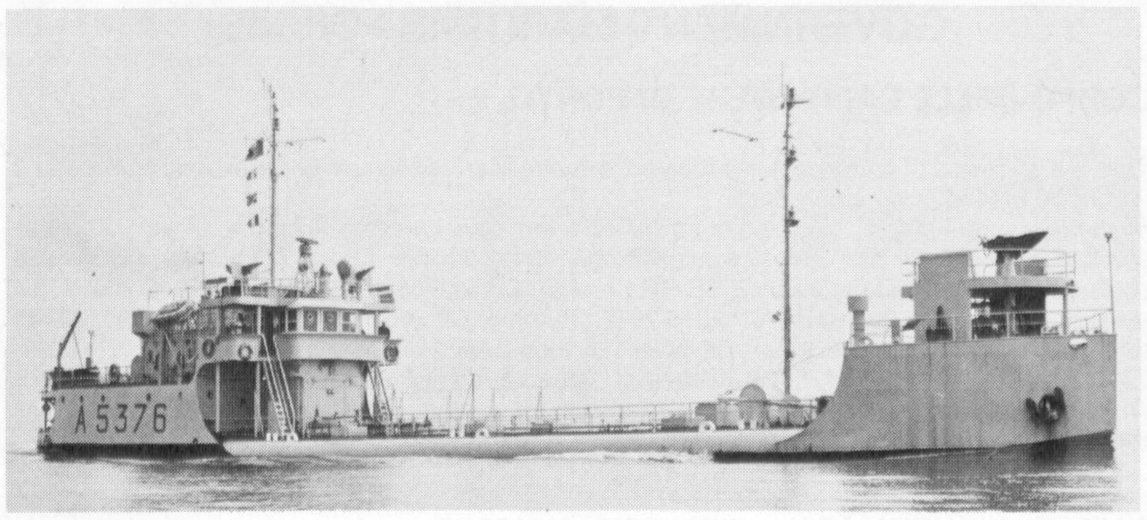
BASENTO *6/1976, Dr. Giorgio Arra*

ADIGE (ex-*YW 92*) A 5369 **TICINO** (ex-*YW 79*) A 5377
TANARO (ex-*YW 99*) A 5376

Ex-US Army YW type. 1 470 tons full load. Complement 35 (4 officers, 31 men).

Guns: 3—20 mm.

Builders: *Adige* and *Tanaro,* Rochester NY; *Ticino,* Bethlehem, New Orleans.



TANARO *6/1976, Dr. Giorgio Arra*

MINCIO A 5374

645 tons. Launched in 1929. Complement 19 (1 officer, 18 men).

BORMIDA A 5359

Complement 11 (1 officer, 10 men).

OFANTO

250 tons. Built 1913-14.

SIMETO **STURA**

Small water carriers of 167 and 126 tons displacement, respectively.

TUGS

CICLOPE A 5319

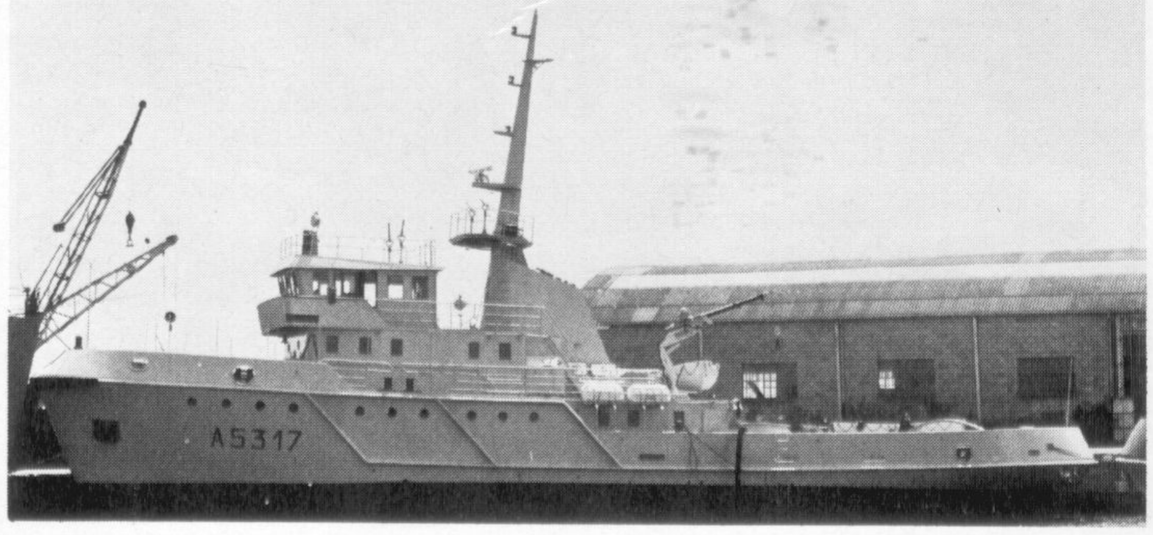
Displacement, tons: 1 200
Dimensions, feet (metres): 157·5 × 32·5 × 13 *(48 × 9·8 × 4)*
Main engine: Triple expansion; 1 shaft; 1 000 ihp = 8 knots

Commissioned 1947.

Name	*No.*	*Builders*	*Commissioned*
ATLANTE	A 5317	Visentini-Donada	14 Aug 1975
PROMETEO	A 5318	Visentini-Donada	14 Aug 1975

Displacement, tons: 750 full load
Dimensions, feet (metres): 127·9 × 32·1 × 13·4 *(39 × 9·6 × 4·1)*
Main engine: Diesel; 1 shaft; cp propeller; 2 670 hp = 13·5 knots

Both launched 1974.

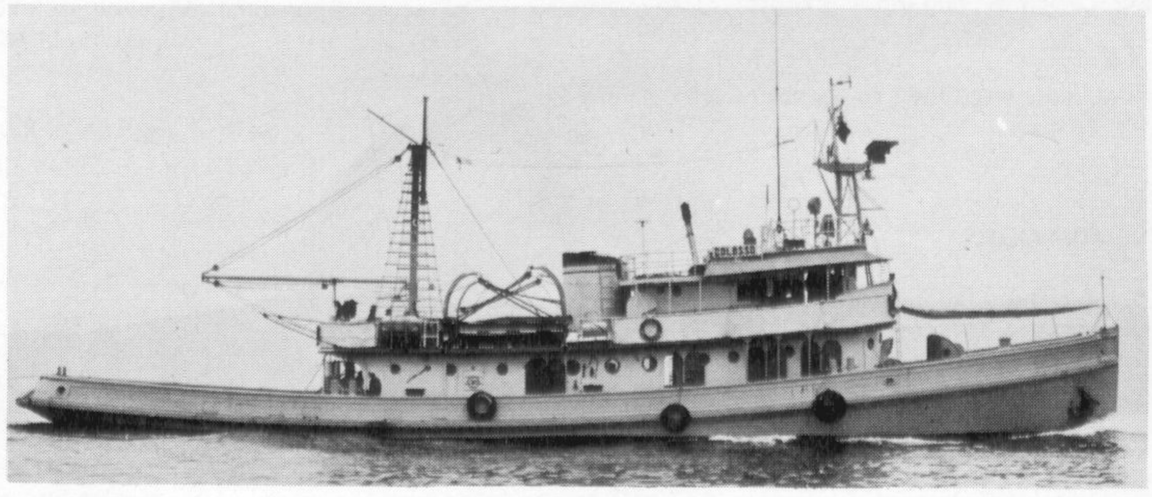


ATLANTE *1975, Dr. Luigi Accorsi*

COLOSSO (ex-*LT 214*) A 5320 **FORTE** (ex-*LT 159*) A 5321

Displacement, tons: 525 standard; 835 full load
Dimensions, feet (metres): 142·8 × 32·8 × 11 *(43·6 × 10 × 3·4)*
Main engines: 2 diesel-electric; 690 hp = 11 knots

Ex-US Army. Built in 1943-44. Transferred 1948.



COLOSSO *6/1976, Dr. Giorgio Arra*

SAN GIUSTO A 5326

Displacement, tons: 486 standard
Main engines: 900 hp = 12 knots

Built in 1952 by CNR, Palermo.

GAGLIARDO A 5322 (1938) **ERCOLE** A 5388 (1971)
ROBUSTO A 5323 (1939) **VIGOROSO** Y 451 (1971)

Displacement, tons: 389 standard; 506 full load
Main engines: 1 000 ihp = 8 knots

PORTO D'ISCHIA Y 436 **RIVA TRIGOSO** Y 443

Displacement, tons: 296 full load
Dimensions, feet (metres): 89·5 × 23·3 × 10·8 *(27·3 × 7·1 × 3·3)*
Main engine: Diesel; 1 shaft; 850 bhp = 12·1 knots

Both launched in September 1969 by CNR Riva Trigoso. Cp propeller.
Porto d'Ischia commissioned 1970, *Riva Trigoso,* 1969.

RIVA TRIGOSO *9/1979, Achille Rastelli*

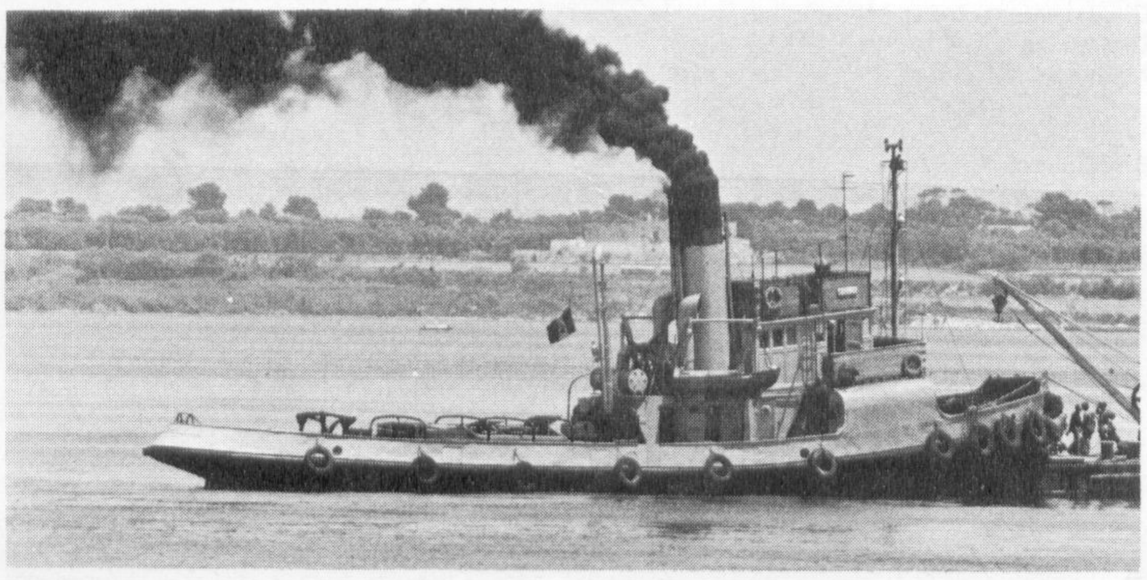
MISENO **MONTE CRISTO**

Displacement, tons: 285
Main engine: 1 diesel General Motors 8/567; 700 shp

Former US Navy harbour tugs. Both commissioned 1 July 1948.

FAVIGNANA Y 424 (1973)
PANTELLERIA Y 432 (1972)
PIANOSA Y 434 (1974)
USTICA Y 448 (1973)

Displacement, tons: 270 standard
Dimensions, feet (metres): 114·8 × 29·5 × 13 *(35 × 9 × 4)*
Main engine: Triple expansion; 1 shaft; 1 200 hp = 13 knots



PANTELLERIA *6/1980, Achille Rastelli*

AUSONIA **PANARIA**

Displacement, tons: 240

Both launched in 1945. Coastal tugs for general duties.

PORTO RECANATI Y 441 (1937) **TINO** Y 447 (1930)

Displacement, tons: 230
Dimensions, feet (metres): 88·8 × 22 × 10 *(27·1 × 6·7 × 3·1)*
Main engines: 600 ihp = 9 knots

Principally employed as harbour tugs.

VENTIMIGLIA

Displacement, tons: 230 standard
Dimensions, feet (metres): 108·2 × 23 × 7·2 *(33 × 7 × 2·2)*
Main engines: 550 hp = 10 knots

Commissioned January 1940.

CIRCEO Y 433 (1956) **PASSERO** Y 439 (1934) **RIZZUTO** Y 473 (1956)

Principally employed as ferry tugs.

RIZZUTO *9/1979, Achille Rastelli*

ALBENGA Y 412 (1973)
ARZACHENA Y 414 (1931)
LAMPEDUSA Y 416 (1972)
BOEO Y 417 (1943)
CARBONARA Y 419 (1936)
CHIOGGIA Y 421 (1919)
POZZI Y 422 (1912)
LINARO Y 430 (1913)
MESCO Y 435 (1933)
NISIDA Y 437 (1943)
PIOMBINO Y 440 (1969)
SAN BENEDETTO Y 446 (1941)
SPERONE Y 454 (1965)
No 78 Y 469 (1965)
No 96 Y 474 (1962)

Small tugs for harbour duties.

BOEO *6/1980, Achille Rastelli*

RP 101 Y 403 (1972)
RP 102 Y 404 (1972)
RP 103 Y 406 (1974)
RP 104 Y 407 (1974)
RP 105 Y 408 (1974)
RP 106 Y 410 (1974)
RP 107 Y 413 (1974)
RP 108 Y 452 (1975)
RP 109 Y 456 (1975)
RP 110 Y 458 (1975)
RP 111 Y 460 (1975)
RP 112 Y 462 (1975)

Displacement, tons: 75 full load
Dimensions, feet (metres): 61·6 × 14·6 × 5·9 *(18·8 × 4·5 × 1·8)*
Main engine: 1 diesel; 431 hp = 12 knots

Built by Cantieri Navali Visentini-Loreo.

FLOATING DOCKS

GO 50

Built in 1949. Capacity 500 tons.

GO 51

Built in 1951. Capacity 2 000 tons.

GO 52

Dimensions, feet (metres): 493·5 × 97 (70·9 internal) × 54 (Flooded)
(150·5 × 29·6 (21·6) × 16·5)
Capacity, tons: 5 000 normal; 6 000 maximum

Built by consortium Nuovi Cantieri Liguri. Completed 1979. At La Spezia although fully self-sufficient in other bases. Has two 8 ton cranes and victualling capacity for 450.

GOVERNMENT MARITIME FORCES

CORPO DELLE CAPITANERE DI PORTO

This is a force of 127 craft which is affiliated with the Marina Militare under whose command it would be placed in an emergency.
Michelle Fiorillo (84 tons); *Bruno Gregoretti* (65 tons); *Dante Novaro* (57 tons); CP 301, 302, 306, 308-311 (29 tons); CP 303, 304 (18 tons); CP 239-245 (23·5 tons); CP 246 (21·5 tons); CP 231-238 (14 tons); CP 226-230 (18-20 tons); CP 601 (3 tons); CP 501, 502 (3·5 tons); CP 2046-2065 (12·4 tons); CP 1001-1006 (5·2 tons); CP 2010-2017 (10 tons); CP 2001-2005 (9 tons); CP 207, 222 (8 tons); CP 202, 204, 205 (8 tons); CP 2024 (15 tons SAR); CP 2032 (12 tons SAR); CP 2025-2031,2033-2041 (11 tons SAR); CP 2018-2023 (10 tons SAR); CP 2006-2009 (11 tons SAR). *Audax* (78 ton tug). Several of the CP craft are armed with machine guns and the great majority are less than ten years old.

GUARDIA DI FINANZA—SERVIZIO NAVALE

This force is operated by the Ministry of Finance but in time of war would come under the command of the Marina Militare. It is divided into fifteen areas in which 48 squadrons operate. In addition to the 157 craft listed, 340 smaller craft are used for patrolling ports, lakes and rivers—a grand total of nearly 500. Nearly all the larger craft are armed with a 20 mm gun or a machine gun.
G 90-91 (109 tons); G 80-81 (79 tons); G 72-79 (57 tons); G 70-71 (54 tons); G 10-66 (40 tons); G 4-5 (40 tons); *Alberti* (28 tons); GL 432-433 (22·9 tons); GL 103-106 (7·1 tons); GL 309-331 (16·4 tons); GL 201-205 (14·4 tons); V 3000 (2·9 tons); V 5901-5902 (10·5 tons); V 1350 (1·5 tons); V 1351 (9 tons); V 1630 (6·8 tons); V 2911-2912 (4·9 tons); V 2901-2904 (4·8 tons); V 5800,5801 (15·1 tons); V 5500-5510 (7·9 tons); V 5300-5302 (5·1 tons); V 1255-1269 (3·6 tons); V 1140-1154 (3·5 tons); *Paolini* G 95 (348 ton training ship).

IVORY COAST

Ministerial

Minister of Marine:
Capitaine de Vaisseau Lamine Fadika

Senior Officer
Capitaine de Corvette Timite Lassana

Bases

Use made of ports at Abidjan, Sassandra, Tabou and San Pedro

Personnel

1981: 500 (45 officers, 455 ratings)

DELETIONS

1979 *Perseverance, Locodjo*

General

Eventually it is intended to organise the navy into two coastal patrol squadrons with the addition of further craft of the "Patra" design.
This force is primarily concerned, in conjunction with aircraft, with both offshore, riverine and coastal protection. Particular emphasis is placed on environmental protection, anti-pollution operations and dealing with fires.

Mercantile Marine

Lloyd's Register of Shipping:
70 vessels of 186 127 tons gross

LIGHT FORCES

2 "PATRA" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
L'ARDENT	—	Chantier Auroux, d'Arcachon	6 Oct 1978
L'INTRÉPIDE	—	Chantier Auroux, d'Arcachon	6 Oct 1978

Displacement, tons: 115 standard; 130 full load
Dimensions, feet (metres): 121·4 × 18 × 5·2 *(37 × 5·5 × 1·6)*
Missiles: 6—SS-12
Guns: 1—40 mm; 1—20 mm
Main engines: 2 AGO V12 CZSHR diesels; 2 shafts (cp propellers); 4 400 shp = 26 knots
Range, miles: 1 750 at 10 knots
Endurance: 10 days
Complement: 19 (2 officers, 17 ratings)

Of similar design to French "Patra" class. Laid down 7 July 1977 *(Intrépide)* and 7 May 1977 *(Ardent).* Both launched 21 July 1978.

2 FRANCO-BELGE TYPE

Name	*No.*	*Builders*	*Commissioned*
LE VIGILANT	—	SFCN	1968
LE VALEUREUX	—	SFCN	25 Sep 1976

Displacement, tons: 235 standard (250 *Valeureux*)
Dimensions, feet (metres): 155·8 × 23·6 × 7·5 *(47·5 × 7 × 2·3)*
(Valeureux 157·5 ft *(48 m))*
Guns: 2—40 mm
Main engines: 2 AGO diesels; 2 shafts; 4 220 bhp = 18·5 knots *(Valeureux* 22 knots*)*
Range, miles: 2 000 at 15 knots
Complement: 34 (4 officers, and 30 men)

Le Vigilant laid down in February 1967. Launched on 23 May 1967. *Le Valeureux* ordered October 1974, laid down 20 October 1975, launched 8 March 1976.

4 COASTAL AND RIVER PATROL CRAFT

Of varying sizes from 24—34 ft including two Rotork FAC 412, one Comoe and one Bandama. Used for river and lake patrols.

LANDING CRAFT

1 BATRAL TYPE (LIGHT TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
ÉLÉPHANT	—	Dubigeon, Normandie	2 Feb 1977

Displacement, tons: 770 standard; 1 330 full load
Dimensions, feet (metres): 262·4 × 42·6 × 9·8 *(80 × 13 × 3)*
Guns: 2—40 mm; 2—81 mm mortars
Main engines: 2 diesels; 2 shafts; cp propellers; 3 600 hp = 16 knots
Range, miles: 4 500 at 13 knots
Complement: 47

Ordered 20 August 1974. Laid down 1975. Fitted with helicopter deck.

1 LCVP

Displacement, tons: 7
Guns: 2 MGs
Main engines: Mercedes diesels
Speed, knots: 9

Built in Abidjan in 1970.

1 LCPS

JAMAICA

Defence Force Coast Guard

Jamaica, which became independent within the Commonwealth on 6 August 1962, formed the Coast Guard as the Maritime Arm of the Defence Force. This is based at HMJS Cagway, Port Royal.

Administration

Commanding Officer Jamaica Defence Force Coast Guard:
Commander P. L. Brady

Personnel

1981: 18 officers, 115 petty officers and ratings
(Coast Guard Reserve: 16 officers, 30 men)

Training

(a) Officers: BRNC Dartmouth and other RN Establishments, RCN and US Search and Rescue School.
(b) Ratings: JMF Training depot, RN, RCN, US Search and Rescue School and MTU Engineering Germany.

Mercantile Marine

Lloyd's Register of Shipping:
10 vessels of 13 307 tons gross.

LIGHT FORCES

Name	*No.*	*Builders*	*Commissioned*
FORT CHARLES	P 7	Sewart Seacraft Inc, Berwick, La, USA	1974

Displacement, tons: 103
Dimensions, feet (metres): 105 × 22 × 7 *(31·5 × 6·6 × 2·1)*
Guns: 1—20 mm; 2—·5 MGs
Main engines: 2 Maybach (MTU) MB 16V 538 TB90 diesels; 7 000 shp = 32 knots
Range, miles: 1 200 at 18 knots
Complement: 16 (3 officers, 13 ratings)

Of all aluminium construction launched July 1974. Navigation equipment includes Omega Navigator. Underwent refit at Jacksonville, Fla, in 1980. Accommodation for 24 soldiers and may be used as 24 bed mobile hospital in an emergency.

FORT CHARLES *1975, Jamaican CG*

Name	*No.*	*Builders*	*Commissioned*
DISCOVERY BAY	P 4	Sewart Seacraft Inc, Berwick, La, USA	3 Nov 1966
HOLLAND BAY	P 5	Sewart Seacraft Inc, Berwick, La, USA	4 Apr 1967
MANATEE BAY	P 6	Sewart Seacraft Inc, Berwick, La, USA	9 Aug 1967

Displacement, tons: 60
Dimensions, feet (metres): 85 × 18 × 6 *(25·9 × 5·7 × 1·8)*
Guns: 3—·5 Browning
Main engines: 3 MTU 8V 331 TC81 diesels, 3 shafts; 3 000 shp = 30 knots
Oil fuel, tons: 13
Range, miles: 800 at 20 knots
Complement: 11 (2 officers, 9 ratings)

All aluminium construction. *Discovery Bay,* the prototype was launched in August 1966. *Holland Bay* and *Manatee Bay* were supplied under the US Military Assistance programme. All three boats were extensively refitted and modified in 1972-73 by the builders with General Motors 12V 71 Turbo-injected engines to give greater range, speed and operational flexibility. They were again re-engined and refitted at Swift Ship Inc, Louisiana, USA—*Discovery Bay* in late 1975, *Holland Bay* in mid-1977 and *Manatee Bay* in late 1977.

JAPAN

MARITIME SELF-DEFENCE FORCE

Note: Costs of ships listed based on current exchange rate.

Naval Board

Chief of the Maritime Staff, Defence Agency:
Admiral Tsugio Yata
Commander-in-Chief, Self-Defence Fleet:
Vice-Admiral Masaru Maeda
Chief, Administration Division, Maritime Staff Office:
Vice-Admiral Tsuruo Koga

Diplomatic Representation

Defence (Naval) Attaché in London:
Captain M. Kiryu
Naval Attaché in Moscow:
Captain Masamichi Oga
Defence Attaché in Paris:
Colonel Shuichiro Nagashima
Defence (Naval) Attaché in Washington:
Rear-Admiral Yutaka Tamura

Personnel

1978: 42 278 (including Naval Air)
plus 4 389 civilians
1979: 42 278 (including Naval Air)
plus 4 365 civilians
1980: 43 897 (including Naval Air)
plus 4 338 civilians

Bases

Naval—Yokosuka, Kure, Sasebo, Maizuru, Ominato
Naval Air—Atsugi, Hachinohe, Iwakuni, Kanoya, Komatsujima, Okinawa, Ozuki, Ominato, Oomura, Shimofusa, Tateyama, Tokushima

Fleet Air Arm

14 Air ASW Sqns, P2-J, P2V-7, PS-1, S2F-1, HSS-2
4 Air Training Sqns, P2-J, P2V-7, YS-11, TC-90, B-65, KM-2, Mentor, Bell-47, OH-6, HSS-2
1 Transport Sqn, YS-11
1 MCM Sqn, V 107

Notes: (a) Eight Orion P3C LRMP aircraft have been requested with an eventual target of 45.
(b) Financial provision made for the following (in Fiscal Years):
1980: Okinawa Air Squadron to be converted to 5th Air Group (MSDF) with 11 P2-J aircraft. New HSS-2 squadron for ships to be established.
1982: (Proposed) 6th Air Squadron of P3C Orions to be established.

New Construction Programme

1975 1 DDH, 1 SS, 3 MSC, 1 LST
1976 1 DDH, 1 MSC, 1 AGS, 1 AOE
1977 1 DD, 1 DE, 1 SS, 2 MSC, 1 ARC
1978 1 DDG, 1 DD, 1 SS, 2 MSC
1979 3—2 900 ton DD, 1—1 400 ton DE, 1—2 200 ton SS, 2—440 ton MSC, 2—500 ton LSU, 1—1 100 ton AGS
1980 2—2 900 ton DD, 1—1 400 ton DE, 1—2 200 ton SS, 2—440 ton MSC
1981 1—4 500 ton DDG, 2—2 900 ton DD, 1—2 200 ton SS, 2—440 ton MSC, 1—3 600 ton ASR

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Submarines—Patrol	14	3
Destroyers	34	9(2)
Frigates	16	1(1)
Large Patrol Craft	11	—
Fast Attack Craft—Torpedo	5	—
Patrol Craft—Coastal	10	—
LSTs	6	—
LSUs	2	1
M/S Support Ships	3	—
Minesweepers—Coastal	35	2
MSBs	6	—
Training Ship	1	—
S/M Rescue Vessels	2	—
Fleet Support Ship	1	—
Support Tanker	1	—
Harbour Tankers	24	—
Icebreakers	1	1
Survey Ships	7	1
Cable Layers	2	—
Training Support Ship	1	—
Experimental Ship	1	—
Auxiliaries	18	—
Tugs	34	—

Mercantile Marine

Lloyd's Register of Shipping:
10 568 vessels of 40 959 683 tons gross

Naval Shipbuilders

Due to amalgamation the names of many Japanese shipyards have changed over the last twenty years and a number have been listed with their Japanese titles—Jyuko = Heavy Industries Co; Zoosen = Shipbuilders. The current situation is as follows:

Present name	*Incorporating*	*Building*
1. Mitsubishi Heavy Industries	Mitsubishi Shipbuilders, Nagasaki; Shin-Mitsubishi Heavy Industries, Kobe; Mitsubishi-Nippon Heavy Industries, Yokohama	DDG and DD at Nagasaki ARC and ASR at Yokohama PT and ASH at Shimonoseki and Hiroshima DD and Submarines at Kobe
2. Ishikawajima Harima Heavy Industries	Ishikawajima Heavy Industries, Tokyo; Kure Shipbuilders; Harima Shipbuilders	DDH, DD, DE and LST at Tokyo 1 and 2 (Yokohama) YF at Isogo, PC at Kure
3. Hitachi Shipbuilders	Hitachi Shipbuilders; Maizuru Heavy Industries, (originally Iino Heavy Industries, Maizuru);	MSC and MSB at Kanagawa DD and DE
4. Sumitomo Heavy Industries	Uraga Heavy Industries (originally Uraga Dock Co); Sumitomo Machine Ltd	DDK, DD and ASR
5. Sasebo Heavy Industries	Originally Sasebo Senpak Kabushiki Kaishiya	LST, PC, ASE and ASU
6. Mitsui Shipbuilders, Tamano	—	DD, DE
7. Kawasaki Heavy Industries, Kobe	—	Submarines and DD
8. Nippon Steel Tube Co	—	Earlier MSC, MSB, AG at Tsurumi Later MSC at Isogo

DELETIONS

Note: A number of ships on removal from the active list are classified as YAC (harbour accommodation ship). As these have no operational value they are included as deletions marked *.

Submarines

1976 *Oyashio* (scrap list 30 Sep)
1977 *Hayashio* (July)
1978 *Natsushio* (20 Mar)
1979 *Wakashio* (23 Mar)
1980 *Fuyushio*

Destroyers

1974 *Ariake, Yugure* (Transferred to South Korea for spares in 1976—scrapped)

Frigates

1975 *Asahi* and *Hatsuhi* (ex-"Cannon" class) returned to USA for disposal
1976 *Ikazuchi*, Akebono*, Kusu*
1977 *Inazuma*, Nire* (sunk as target 21 Aug), *Keyaki* (scrapped)
1978 *Kaya* (sunk as missile target—15 June 1979)

Corvettes

1977 *Kari, Kiji, Taka, Washi, Tsubame* (14 May), *Kamome* and *Misago* (1 Dec)

Light Forces

1974 PT 8; *Kosoku* 2, 4 and 5
1975 PT 10
1979 *Umitaka*

LSTs

1974 *Oosumi*
1975 *Shimokita*
1976 *Shiretoko* (returned to USA in Mar and passed to Philippines)

LSM

1974 3001

Mine Warfare Forces

1974 MSB 03, 04, deleted; 6 MSC converted
1975 MSB 05, 06 deleted; 3 MSC converted
1976 3 MSC converted
1978 2 MSC converted
1980 2 MSC converted

Tenders

1974 YAS 48 (ex-PT 1), YAS 54 (ex-PT 5), YAS 55 (ex-PT 6), YAS 45 (*Suma*, ex-US YTL 749), YAS 59 (*Minho*, ex-US FS 524)
1976 YAS 51 (*Nasami* ex-US FS 409), YAS 3 (ex-US YTL 750), YAS 47 (ex-MSC 652 ex-US AMS 595)
1978 YAS 46, 57, 60 and 61
1980 YAS 56 (*Atada*)

Surveying Ship

1979 *Roku-Go*

PENNANT LIST

Submarines—Patrol

SS 561	Ooshio
SS 562	Asashio
SS 563	Harushio
SS 564	Michishio
SS 565	Arashio
SS 566	Uzushio
SS 567	Makishio
SS 568	Isoshio
SS 569	Narushio
SS 570	Kuroshio
SS 571	Takashio
SS 572	Yaeshio
SS 573	Yuushio
SS 574	Mochishio
SS 575	Setoshio
SS 576	New Construction
SS 577	New Construction

Destroyers

DD 101	Harukaze
DD 102	Yukikaze
DD 103	Ayanami
DD 104	Isonami
DD 105	Uranami
DD 106	Shikinami
DD 107	Murasame
DD 108	Yudachi
DD 109	Harusame
DD 110	Takanami
DD 111	Oonami
DD 112	Makinami
DD 113	Yamagumo
DD 114	Makigumo
DD 115	Asagumo
DD 116	Minegumo
DD 117	Natsugumo
DD 118	Murakumo
DD 119	Aokumo
DD 120	Akigumo
DD 121	Yugumo
DD 122	Hatsuyuki
DD 123	New Construction
DD 124	New Construction
DD 125	New Construction
DD 126	New Construction
DD 127	New Construction
DD 128	New Construction
DD 129	New Construction
DD 141	Haruna
DD 142	Hiei
DD 143	Shirane
DD 144	Kurama
DD 161	Akizuki
DD 162	Teruzuki
DD 163	Amatsukaze
DD 164	Takatsuki
DD 165	Kikuzuki
DD 166	Mochizuki
DD 167	Nagatsuki
DD 168	Tachikaze
DD 169	Asakaze
DD 170	New Construction

Frigates

DE 211	Isuzu
DE 212	Mogami
DE 213	Kitakami
DE 214	Ooi
DE 215	Chikugo
DE 216	Ayase
DE 217	Mikuma
DE 218	Tokachi
DE 219	Iwase
DE 220	Chitose
DE 221	Niyodo
DE 222	Teshio
DE 223	Yoshino
DE 224	Kumano
DE 225	Noshiro
DE 226	Ishikari
DE 227	New Construction

Light Forces

PC 310	Otaka
PC 311	Mizutori
PC 312	Yamadori
PC 313	Otori
PC 314	Kasasagi
PC 315	Hatsukari
PC 316	Umidori
PC 317	Wakataka
PC 318	Kumataka
PC 319	Shiratori
PC 320	Hiyodori
PC 811-815	PT 11-15
PC 919-927	PB 19-27
PC 06	Kosoku 6

Minesweepers—Coastal

MSC 621	Ootsu
MSC 622	Kudako
MSC 623	Rishiri
MSC 624	Rebun
MSC 625	Amami
MSC 626	Urume
MSC 627	Minase
MSC 628	Ibuki
MSC 629	Katsura
MSC 630	Takami
MSC 631	Iou
MSC 632	Miyake
MSC 633	Utone
MSC 634	Awaji
MSC 635	Toushi
MSC 636	Teuri
MSC 637	Murotsu
MSC 638	Tashiro
MSC 639	Miyato
MSC 640	Takane
MSC 641	Muzuki
MSC 642	Yokose
MSC 643	Sakate
MSC 644	Oumi
MSC 645	Fukue

Minesweepers—Coastal

MSC 646	Okitsu
MSC 647	Hashira
MSC 648	Iwai
MSC 649	Hatsushima
MSC 650	Ninoshima
MSC 651	Miyajima
MSC 652	Enoshima
MSC 653	Ukishima
MSC 654	New Construction
MSC 655	New Construction

Minesweeping Boats

707	Nana-Go
708	Hachi-Go
709	Kyuu-Go
710	Jyuu-Go
711	Jyuu-Ichi-Go
712	Jyuu-Ni-Go

Minesweeper Tender

MST 473	Kouzu

MSC Support Ships

MMC 951	Souya
MST 462	Hayase

Amphibious Forces

LST 4101	Atsumi
LST 4102	Motobu
LST 4103	Nemuro
LST 4151	Miura
LST 4152	Ozika
LST 4153	Satsuma
LSU 4171	Yura
LSU 4172	Noto

Salvage Vessel

YE 41	Shobo 1

Submarine Rescue Ships

ASR 401	Chihaya
ASR 402	Fusimi

Tanker

AO 411	Hamana

Fleet Support Ship

AOE 421	Sagami

Training Ship

TV 3501	Katori

Training Support Ship

ATS 4201	Azuma

Cable Layer

ARC 482	Muroto

Icebreakers

AGB 5001	Fuji
AGB 5002	New Construction

Surveying Ships

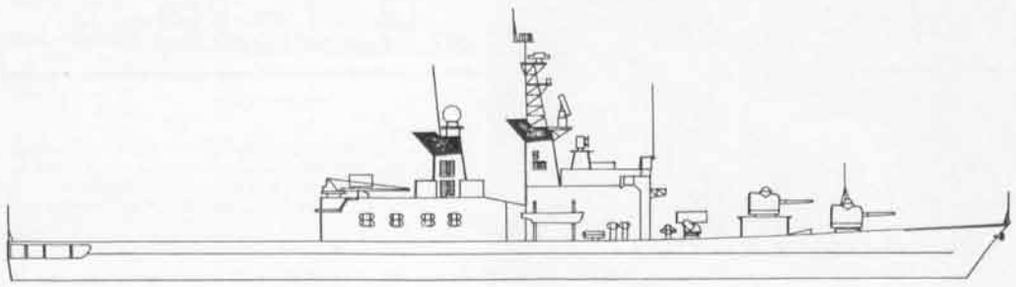
AGS 5101	Akashi
AGS 5102	Futami
AGS 5111	Ichi-Go
AGS 5112	Ni-Go
AGS 5113	San-Go
AGS 5114	Yon-Go
AGS 5115	Go-Go

Tugs

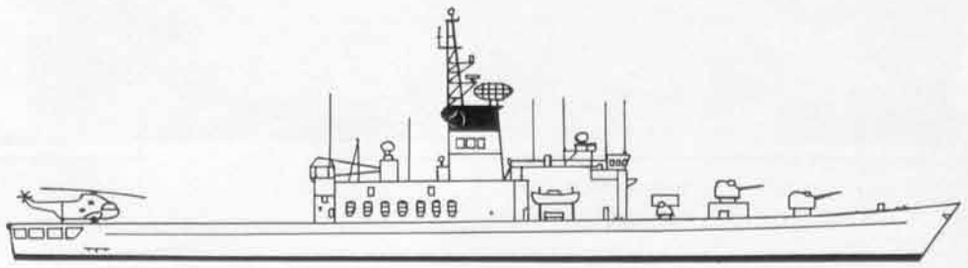
YT 53	
YT 55	
YT 56	
YT 57	
YT 58	

Tenders

ASE 6101	Kurihama
ASU 81-85	
ASU 7001	Tsugaru
ASY 91	Hayabusa
YAS 58	Yashiro
YAS 62	Shisaka
YAS 63	Koshiki
YAS 64	Sakito
YAS 65	Kanawa
YAS 66	Tsukumi
YAS 67	Mikura
YAS 68	Shikine
YAS 69	Erimo
YAS 70	Hotaka
YAS 71	Karato
YAS 73	Mutsure
YAS 74	Chiburi



"SHIRANE" Class



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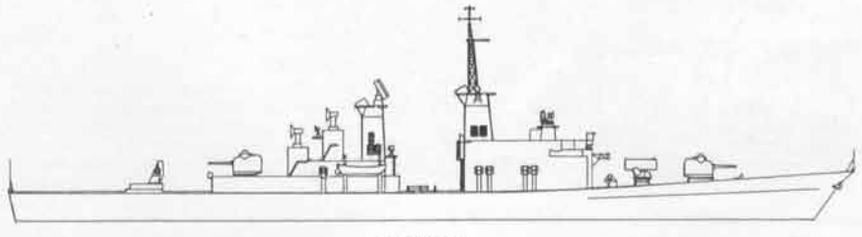
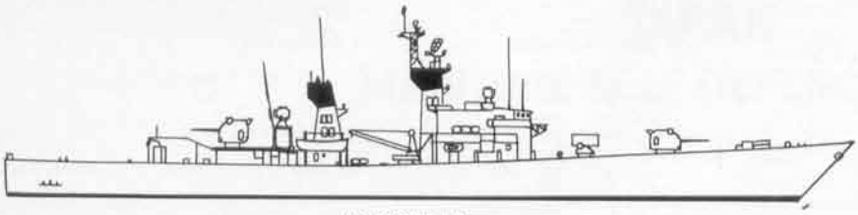


TACHIKAZE



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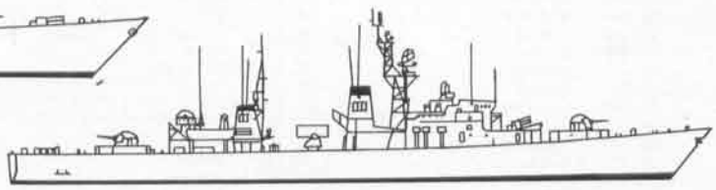
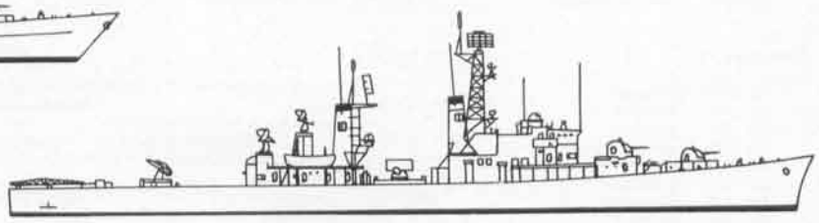


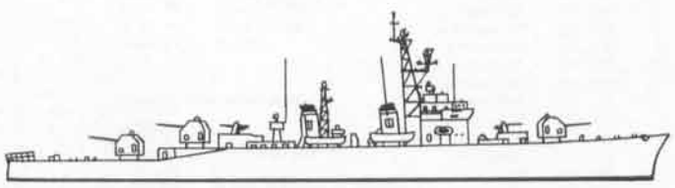
"YAMAGUMO" Class

"MINEGUMO" Class

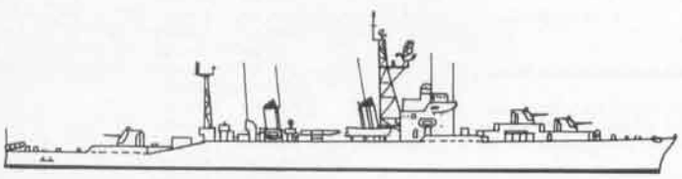


AMATSUKAZE

"AKIZUKI" Class



"MURASAME" Class



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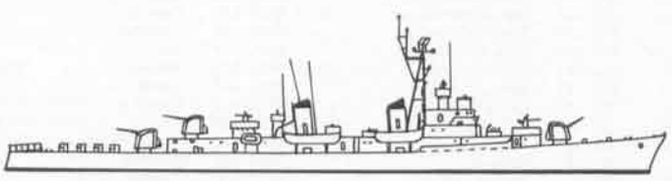
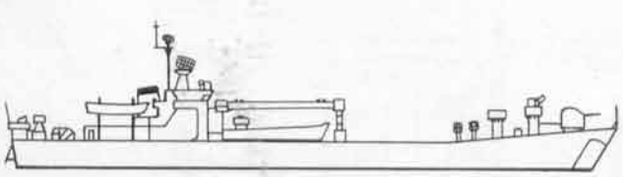


"HARUKAZE" Class

"CHIKUGO" Class

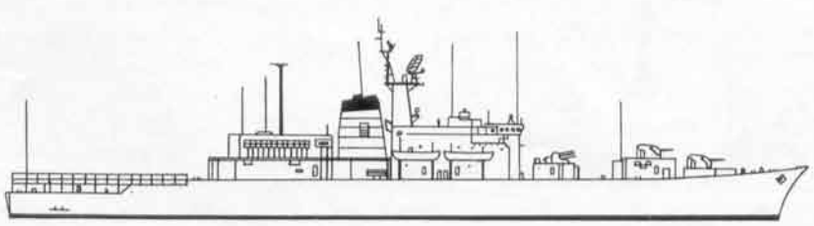
"ISUZU" Class

"MIZUTORI" Class



"MIURA" Class

AZUMA



KATORI

SUBMARINES

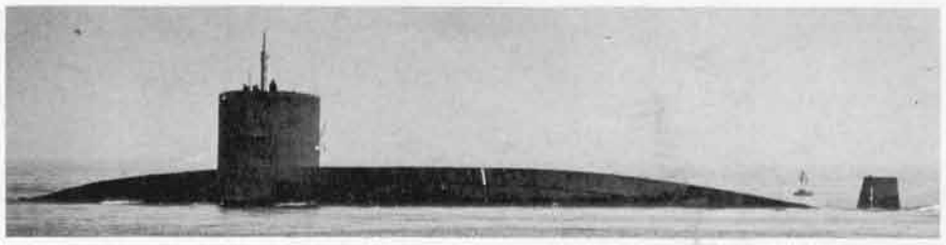
2 + 3 "YUUSHIO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
YUUSHIO	SS 573	Mitsubishi, Kobe	3 Dec 1976	29 Mar 1979	26 Feb 1980
MOCHISHIO	SS 574	Kawasaki, Kobe	28 Apr 1978	12 Mar 1980	Mar 1981
SETOSHIO	SS 575	Mitsubishi, Kobe	17 Apr 1979	Feb 1981	Mar 1982
—	SS 576	Kawasaki, Kobe	Apr 1980	Feb 1982	Mar 1983
—	SS 577	—	Apr 1981	Feb 1983	Mar 1984

Displacement, tons: 2 200
Dimensions, feet (metres): 249·3 × 32·5 × 24·6 *(76 × 9·9 × 7·5)*
Torpedo tubes: 6—21 in *(533 mm)* amidships
Main machinery: 2 Kawasaki MAN diesels; 4 200 bhp; 1 shaft; 1 electric motor; 7 200 bhp
Speed, knots: 12 surfaced; 20 dived
Complement: 75

An enlarged version of the "Uzushio" class with improved diving depth. *Yuushio* approved in FY 1975, *Mochishio* in FY 1977, *Setoshio* in FY 1978, 576 in FY 1979 and 577 in FY 1980.

Costs: £53·4 million.



YUUSHIO *11/1980, H. Kobayashi*

7 "UZUSHIO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
UZUSHIO	SS 566	Kawasaki, Kobe	25 Sep 1968	11 Mar 1970	21 Jan 1971
MAKISHIO	SS 567	Mitsubishi, Kobe	21 June 1969	27 Jan 1971	2 Feb 1972
ISOSHIO	SS 568	Kawasaki, Kobe	9 July 1970	18 Mar 1972	25 Nov 1972
NARUSHIO	SS 569	Mitsubishi, Kobe	8 May 1971	22 Nov 1972	28 Sep 1973
KUROSHIO	SS 570	Kawasaki, Kobe	5 July 1972	22 Feb 1974	27 Nov 1974
TAKASHIO	SS 571	Mitsubishi, Kobe	6 July 1973	30 June 1975	30 Jan 1976
YAESHIO	SS 572	Kawasaki, Kobe	14 Apr 1975	19 May 1977	7 Mar 1978

Displacement, tons: 1 850 standard
Dimensions, feet (metres): 236·2 × 29·5 × 24·6 *(72 × 9 × 7·5)*
Torpedo tubes: 6—21 in *(533 mm)*; amidships
Main machinery: 2 Kawasaki MAN diesels; 3 400 bhp; 1 shaft; 1 electric motor; 7 200 hp
Speed, knots: 12 surfaced; 20 dived
Complement: 80

Of double-hull construction and "tear-drop" form, built of HT steel to increase diving depth to 650 ft *(200 m)*. New bow sonar fitted.

MAKISHIO *1976, Maritime Self-Defence Force*

5 "OOSHIO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
OOSHIO	SS 561	Mitsubishi, Kobe	29 June 1963	30 Apr 1964	31 Mar 1965
ASASHIO	SS 562	Kawasaki, Kobe	5 Oct 1964	27 Nov 1965	13 Oct 1966
HARUSHIO	SS 563	Mitsubishi, Kobe	12 Oct 1965	25 Feb 1967	1 Dec 1967
MICHISHIO	SS 564	Kawasaki, Kobe	26 July 1966	5 Dec 1967	29 Aug 1968
ARASHIO	SS 565	Mitsubishi, Kobe	5 July 1967	24 Oct 1968	25 July 1969

Displacement, tons: 1 650 standard; *Ooshio* 1 600
Dimensions, feet (metres): 288·7 × 26·9 × 16·2 *(Ooshio* 15·4*) (88 × 8·2 × 4·9 (4·7))*
Torpedo tubes: 6—21 in *(533 mm)* (bow); 2—12·7 in A/S torpedoes in swim-out tubes (stern)
Main machinery: 2 diesels; 2 900 bhp; 2 shafts; 2 electric motors; 6 300 hp
Speed, knots: 14 surfaced; 18 dived
Complement: 80

Double-hulled boats. A bigger design to obtain improved seaworthiness, a larger torpedo capacity and more comprehensive sonar and electronic devices. *Ooshio* was built under the 1961 programme, *Asashio* 1963.

ASASHIO *1976, Maritime Self-Defence Force*

DESTROYERS

0 + 1 NEW CONSTRUCTION

Displacement, tons: 4 500
Dimensions, feet (metres): 469 × 51·2 × 19 *(143 × 15·6 × 5·8)*
Missiles: SSM; 8 Harpoon; SAM; Sea Sparrow
Guns: 2—5 in *(127 mm)*/54 (single Mk 42); 1—CIWS system
A/S weapons: US Mk 16 Octuple Asroc launcher
Main engines: COGAG; 72 000 hp
Speed, knots: 32

Provided for in 1981 programme.

2 "SHIRANE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
SHIRANE	DD 143	Ishikawajima Harima, Tokyo	25 Feb 1977	18 Sep 1978	20 Mar 1980
KURAMA	DD 144	Ishikawajima Harima, Tokyo	17 Feb 1978	20 Sep 1979	Mar 1981

Displacement, tons: 5 200
Dimensions, feet (metres): 521·5 × 57·5 × 17·5 *(159 × 17·5 × 5·3)*
Aircraft: 3 anti-submarine helicopters
Missiles: SAM; 1 Sea Sparrow launcher
Guns: 2—5 in *(127 mm)*/54 (single Mk 42); 2—20 mm CIWS
A/S weapons: US Mk 16 Octuple Asroc launcher; 6 (2 triple) Type 68 torpedo tubes
Main engines: 2 turbines; 70 000 shp; 2 shafts
Speed, knots: 32
Complement: 350

One in 1975 programme and one in 1976 programme. Contract for DD 144 signed 31 March 1977. Fitted with Vosper Thornycroft fin stabilisers. The fore funnel is offset slightly to port, the after funnel to starboard. The crane is set on the starboard after corner of the hangar.

Gunnery: Mk 2 GFCS.

Radar: Air search: SPS 52B; OPS 28.

Sonar: OQS 101 (hull-mounted); SQS 35(J) (VDS). TASS *(Kurama)*.

SHIRANE — *7/1980, Ships of the World*

KURAMA — *9/1980, H. Kobayashi*

2 "HARUNA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HARUNA	DD 141	Mitsubishi, Nagasaki	19 Mar 1970	1 Feb 1972	22 Feb 1973
HIEI	DD 142	Ishikawajima, Tokyo	8 Mar 1972	13 Aug 1973	27 Nov 1974

Displacement, tons: 4 700
Dimensions, feet (metres): 502 × 57·4 × 16·7 *(153 × 17·5 × 5·1)*
Aircraft: 3 anti-submarine helicopters
Missiles: See *Refit* note
Guns: 2—5 in *(127 mm)*/54 (single Mk 42)
A/S weapons: US Mk 16 Octuple Asroc launcher; 6 (2 triple) Type 68 torpedo tubes
Main engines: 2 turbines; 70 000 shp; 2 shafts
Speed, knots: 32
Complement: 364

Ordered under the third five-year defence programme (from 1967-71).
The enclosed bridge has an area of 100 sq metres compared with *Takatsuki*'s 70 sq metres.The funnel is offset slightly to port. Fitted with fin stabilisers.
A heavy crane has been fitted on the top of the hangar, port side.

Aircraft: Fitted with Canadian Beartrap haul down gear.

Gunnery: Mk 1 GFCS.

Radar: Air search: OPS 11.
Surface search: OPS 17.

Refits: In 1980-84 both to be taken in hand for modifications including fitting of Sea Sparrow.

Sonar: OQS 3 (hull-mounted).

HIEI — *3/1980, Dr. Giorgio Arra*

HARUNA — *9/1980, H. Kobayashi*

0 + 7 + (2) "HATSUYUKI" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HATSUYUKI	DD 122	Sumitomo, Uraga	14 Mar 1979	7 Nov 1980	Mar 1982
—	DD 123	Hitachi, Maizuru	3 Dec 1979	Aug 1981	Feb 1983
—	DD 124	Mitsubishi, Nagasaki	Jan 1981	Oct 1982	Mar 1984
—	DD 125	Ishikawajima Harima, Tokyo	Jan 1981	Aug 1982	Feb 1984
—	DD 126	Mitsui, Tamano	Jan 1981	June 1982	Feb 1984
—	DD 127	—	Aug 1982	Aug 1983	Jan 1985
—	DD 128	—	Aug 1981	Aug 1983	Jan 1985
—	DD 129	—	—	—	—
—	—	—	—	—	—

Displacement, tons: 2 950
Dimensions, feet (metres): 413·3 × 44·6 × 27·9 *(126 × 13·6 × 8·5)*
Aircraft: 1 HSS-2 A/S helicopter
Missiles: SSM; 8 Harpoon (2 quad launchers); SAM; 1 Sea Sparrow
Gun: 1—76 mm/62 (single Compact); 2 Phalanx CIWS (later ships)
A/S weapons: 1 Asroc; 6 (2 triple) Type 68 torpedo tubes
Main engines: COGOG; 2 Olympus TM3B; 45 000 shp; 2 Tyne RMIC; 2 shafts; 10 680 shp; (cp propellers)
Speed, knots: 30

DD 122 approved in 1977 estimates, DD 123 in 1978 estimates and DD 124-126 in FY 1979. Two in FY 1980 and two in FY 1981. Fitted with fin stabilisers. Have HSA WM 20 fire control system and hull-mounted sonar.

Costs: £57·1 million.

HATSUYUKI — *12/1980, H. Kobayashi*

2 + 1 "TACHIKAZE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
TACHIKAZE	DD 168	Mitsubishi, Nagasaki	19 June 1973	7 Dec 1974	26 Mar 1976
ASAKAZE	DD 169	Mitsubishi, Nagasaki	27 May 1976	15 Oct 1977	27 Mar 1979
— (see *Class* note)	DD 170	Mitsubishi, Nagasaki	14 Sep 1979	June 1981	Mar 1983

Displacement, tons: 3 900; 3 850 *(Asakaze)*
Dimensions, feet (metres): 443 × 47 × 15 *(135 × 14·3 × 4·6)*
Length: 469 *(143) (Asakaze)*
Missiles: SAM; 1 Tartar D launcher Mk 13 Mod 3 for Standard RIM 60A (see *Class* note)
Guns: 2—5 in *(127 mm)*/54 (single Mk 42)
A/S weapons: US Mk 16 Octuple Asroc launcher; 6 (2 triple) Type 68 torpedo tubes
Main engines: 2 Westinghouse turbines; 2 shafts; 60 000 hp
Speed, knots: 33 (32, *Asakaze*)
Complement: 260 (250, *Asakaze*)

Asakaze ordered 3 March 1975. DD 170 approved in 1978 estimates and ordered 31 July 1978.

Class: DD 170 is to be of an improved design equipped with 8 Harpoon.

Costs: £95·7 million.

Gunnery: Mk 1 GFCS.

Radar: 3D search: SPS 52.
Air search: OPS 11 *(Asakaze)*.
Surface search: OPS 17.
Missile control: SPG 51.

Sonar: OQS 3 (hull-mounted).

ASAKAZE *7/1980, H. Kobayashi*

4 "TAKATSUKI" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
TAKATSUKI	DD 164	Ishikawajima Harima, Tokyo	8 Oct 1964	7 Jan 1966	15 Mar 1967
KIKUZUKI	DD 165	Mitsubishi, Nagasaki	15 Mar 1966	25 Mar 1967	27 Mar 1968
MOCHIZUKI	DD 166	Ishikawajima Harima, Tokyo	25 Nov 1966	15 Mar 1968	25 Mar 1969
NAGATSUKI	DD 167	Mitsubishi, Nagasaki	2 Mar 1968	19 Mar 1969	12 Feb 1970

Displacement, tons: 3 100
Dimensions, feet (metres): 446·2 × 44 × 14·5 *(136 × 13·4 × 4·4)*
Aircraft: 2 Dash helicopters (see *Modifications* note)
Missiles: (see *Modifications* note)
Guns: 2—5 in *(127 mm)*/54 (single Mk 42) (see *Modifications* note)
A/S weapons: 1 US Mk 16 Octuple Asroc launcher; 1 Type 71 Bofors 4-barrelled rocket launcher; 6 (2 triple) Type 68 torpedo tubes
Main engines: 2 Mitsubishi WH geared turbines; 60 000 shp; 2 shafts
Boilers: 2 Mitsubishi CE
Speed, knots: 32
Range, miles: 7 000 at 20 knots
Complement: 270

Takatsuki was provided under the 1963 programme. Equipped with helicopter hangar. The mainmast with Tacan aerial on the after funnel is not fitted in *Mochizuki*.

Gunnery: US Mk 56 GFCS or Mk 1 GFCS.

Modifications: In 1980 *Takatsuki* taken in hand for modifications to include removal of after 5-in gun and Dash helicopters, fitting of SSM Harpoon SAM Sea Sparrow and CIWS 20 mm machine gun. Approval for similar modifications in other three ships not yet given.

Radar: Air search: OPS 11.
Surface search: OPS 17.
Fire control: US Mk 35.

MOCHIZUKI *8/1979, Michael D. J. Lennon*

Sonar: VDS: SQS 35(J); *Takatsuki* (1970), *Kikuzuki* (1972).
Remainder not so fitted though planned.
Hull: SQS 23 (164-165); OQS 3 (166-167).

6 "YAMAGUMO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
YAMAGUMO	DD 113	Mitsui, Tamano	23 Mar 1964	27 Feb 1965	29 Jan 1966
MAKIGUMO	DD 114	Uraga	10 June 1964	26 July 1965	19 Mar 1966
ASAGUMO	DD 115	Maizuru	24 June 1965	25 Nov 1966	29 Aug 1967
AOKUMO	DD 119	Sumitomo, Uraga	2 Oct 1970	30 Mar 1972	25 Nov 1972
AKIGUMO	DD 120	Sumitomo, Uraga	7 July 1972	23 Oct 1973	24 July 1974
YUGUMO	DD 121	Sumitomo, Uraga	4 Feb 1976	31 May 1977	24 Mar 1978

Displacement, tons: 2 150
Dimensions, feet (metres): 377 × 38·7 × 13·1 *(114·9 × 11·8 × 4)*
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 1 US Mk 16 Octuple Asroc launcher; one Type 71 Bofors 4-barrelled rocket launcher; 6 (2 triple) Type 68 torpedo tubes
Main engines: 6 diesels; 26 500 bhp; 2 shafts
Speed, knots: 27
Range, miles: 7 000 at 20 knots
Complement: 210

Class: DD 121 was to have been lead ship of an improved class—slightly larger with CODOG machinery giving possibly up to 32 knots. This plan has been replaced by the new "DD 122" class of 2 950 tons. Of this class DD 113, 114 and 115 have tripod mainmast and the remainder lattice mainmasts.

Gunnery: US Mk 56 GFCS; US Mk 63 GFCS.
Two Mk 1 GFCS (later ships).

Radar: Air search: OPS 11.
Surface search: OPS 17.
Fire control: US Mk 35.

YUGUMO *1979, Maritime Self-Defence Force*

Sonar: Hull-mounted: SQS 23 (113-115); OQS 3 (119-121).
VDS: SQS 35(J) (113, 114, 120, 121.)

3 "MINEGUMO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MINEGUMO	DD 116	Mitsui, Tamano	14 Mar 1967	16 Dec 1967	21 Aug 1968
NATSUGUMO	DD 117	Uraga	26 June 1967	25 July 1968	25 Apr 1969
MURAKUMO	DD 118	Maizuru	19 Oct 1968	15 Nov 1969	21 Aug 1970

All hull and propulsion data as for "Yamagumo" class. Note difference in silhouettes between this and the "Yamagumo" class.

Class: As completed the three "Minegumo" class have the same characteristics as the "Yamagumo" class. Instead of receiving Asroc, the "Minegumo" class were fitted with Dash. This anti-submarine weapon system proved to be a failure. In 1978 *Murakumo* was re-armed; the remaining ships will be similarly refitted by end 1981 and will also have hangar enlarged to take one SH-2F Kaman helicopter.

Aircraft: Two Dash drone helicopters, *Minegumo* and *Natsugumo* only (see *Class* note).

A/S weapons: One US Mk 16 Octuple Asroc launcher; six (two triple) Type 68 torpedo tubes; one Type 71 Bofors rocket launcher.

Guns: Two 3-in *(76 mm)*/50 (twin Mk 33); one 76 mm Compact in *Murakumo*; others as "Yamagumo" class.

MURAKUMO — *6/1980, H. Kobayashi*

Radar: Air search: OPS 11.
Surface search: OPS 17.
Fire control: Unidentified in *Murakumo*; US Mk 35 (others).

Sonar: Hull-mounted: OQS 3.
VDS: 35 (J) *(Murakumo* only).

1 "AMATSUKAZE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
AMATSUKAZE	DD 163	Mitsubishi, Nagasaki	29 Nov 1962	5 Oct 1963	15 Feb 1965

Displacement, tons: 3 050 standard; 4 000 full load
Dimensions, feet (metres): 429·8 × 44 × 13·8 *(131 × 13·4 × 4·2)*
Missiles: SAM; Standard ASM-12 (single launcher)
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 1 US Mk 16 Octuple Asroc launcher; 2 Hedgehogs Mk 15; 6 (2 triple) Type 68 torpedo tubes
Main engines: 2 Ishikawajima GE geared turbines 2 shafts; 60 000 shp
Boilers: 2 Ishikawajima Foster-Wheeler
Speed, knots: 33
Oil fuel, tons: 900
Range, miles: 7 000 at 18 knots
Complement: 290

Ordered under the 1960 programme. Refitted in 1967 when A/S tubes and new sonar were fitted. In 1968 equipped with Asroc launcher between funnels.

Gunnery: US Mk 63 GFCS.

Missiles: In 1978 Tartar was replaced by Standard ASM-12.

Radar: 3D search: SPS 52.
Air search: SPS 29.
Surface search: OPS 16.
Missile control: SPG 51C.

Sonar: SQS 23.

AMATSUKAZE — *3/1980, Dr. Giorgio Arra*

2 "AKIZUKI"CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
AKIZUKI	DD 161	Mitsubishi, Nagasaki	31 July 1958	26 June 1959	13 Feb 1960
TERUZUKI	DD 162	Shin Mitsubishi, Kobe	15 Aug 1958	24 June 1959	29 Feb 1960

Displacement, tons: 2 350 standard; 2 890 full load
Dimensions, feet (metres): 387·2 × 39·4 × 13·1 *(118 × 12 × 4)*
Guns: 3—5 in *(127 mm)*/54 (single Mk 39)
4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 6 (2 triple) Type 68 torpedo tubes; one 4-barrelled Type 71 Bofors 375 mm rocket launcher
Torpedo tubes: 4—21 in *(533 mm)* Type 65 (quad)
Main engines: 2 geared turbines: *Akizuki:* Mitsubishi/Escher-Weiss. *Teruzuki:* Westinghouse 45 000 shp, 2 shafts
Boilers: 2 Mitsubishi CE type
Speed, knots: 32
Complement: 330

Built under the 1957 Military Aid Programme.

A/S weapons: *Teruzuki* re-armed September 1976-January 1977, *Akizuki* in 1979.

Gunnery: US Mk 57 GFCS; US Mk 63 GFCS.

Guns: The 5-in Mk 39 were originally mounted in the US "Midway" class.

Radar: Air search: OPS 1.
Surface search: OPS 15.
Fire control: US Mk 34.

Sonar: Hull-mounted: SQS 29.
VDS: OQA 1 *(Akizuki* (1968)—*Teruzuki* (1967)).

TERUZUKI — *1978*

3 "MURASAME" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MURASAME	DD 107	Mitsubishi, Nagasaki	17 Dec 1957	31 July 1958	28 Feb 1959
YUDACHI	DD 108	Ishikawajima, Tokyo	16 Dec 1957	29 July 1958	25 Mar 1959
HARUSAME	DD 109	Uraga	17 June 1958	18 June 1959	15 Dec 1959

Displacement, tons: 1 800 standard; 2 500 full load
Dimensions, feet (metres): 354·3 × 36 × 12·2 *(108 × 11 × 3·7)*
Guns: 3—5 in *(127 mm)*/54 (single Mk 39);
4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 2 Mk 4 torpedo launchers; 1 Hedgehog; 1 DC rack; 1 Y-gun (see *A/S weapons* note)
Main engines: 2 sets geared turbines; 30 000 shp; 2 shafts
Boilers: 2 (see *Engineering* notes)
Speed, knots: 30
Range, miles: 6 000 at 18 knots
Complement: 250

Murasame and *Yudachi* were built under the 1956 Programme, *Harusame* 1957 Programme.

A/S weapons: *Murasame* fitted September 1975 and *Harusame* in 1979 with two Type 68 triple torpedo tubes in place of the Mk 4 above. DC rack and Y-gun removed.

Engineering: *Murasame* has Mitsubishi Jyuko turbines and Mitsubishi CE boilers; and the other two have Ishikawajima Harima Jyuko turbines and Ishikawajima FW-D boilers.

Gunnery: US Mk 57 and 63 GFCS.

HARUSAME *1975, Maritime Self-Defence Force*

Guns: As in the "Akizuki" class the 5-in guns were originally mounted in the US "Midway" class.

Radar: Air search: OPS 1.
Surface search: OPS 15.
Fire control: US Mk 34.

Sonar: Hull-mounted: SQS 29.
VDS: OQA 1 *(Harusame* (1968)).

7 "AYANAMI" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
AYANAMI	DD 103	Mitsubishi, Nagasaki	20 Nov 1956	1 June 1957	12 Feb 1958
ISONAMI	DD 104	Shin Mitsubishi, Kobe	14 Dec 1956	30 Sep 1957	14 Mar 1958
URANAMI	DD 105	Kawasaki, Tokyo	1 Feb 1957	29 Aug 1957	27 Feb 1958
SHIKINAMI	DD 106	Mitsui, Tamano	24 Dec 1956	25 Sep 1957	15 Mar 1958
TAKANAMI	DD 110	Mitsui, Tamano	8 Nov 1958	8 Aug 1959	30 Jan 1960
OONAMI	DD 111	Ishikawajima, Tokyo	20 Mar 1959	13 Feb 1960	29 Aug 1960
MAKINAMI	DD 112	Iino, Maizuru	20 Mar 1959	25 Apr 1960	30 Oct 1960

Displacement, tons: 1 700 standard; 2 500 full load
Dimensions, feet (metres): 357·6 × 35·1 × 12 *(109 × 10·7 × 3·7)*
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 6 (2 triple) Type 68 torpedo tubes (103, 104, 105, 106, 112); 2 Mk 4 torpedo tubes (110, 111); 2 US Mk 15 Hedgehogs
Torpedo tubes: 4—21 in *(533 mm)* Type 65 (quad) (103, 105, 110, 111, 112) (see *Training ships* notes)
Main engines: 2 Mitsubishi/Escher-Weiss geared turbines; 2 shafts; 35 000 shp
Boilers: 2 (see *Engineering* notes)
Speed, knots: 32
Range, miles: 6 000 at 18 knots
Complement: 230

A/S weapons: Trainable Hedgehogs forward of the bridge. Mk 4 tubes use obsolete Mk 32 torpedoes.

Engineering: Types of boilers installed are as follows: Mitsubishi CE in *Ayanami, Isonami,* and *Uranami.* Hitachi, Babcock & Wilcox in *Oonami, Shikinami* and *Takanami.* Kawasaki Jyuko BD in *Makinami.*

Gunnery: US Mk 57 and 63 GFCS.

OONAMI *1979*

Guns: Gunshields are of Japanese design and manufacture.

Radar: Air search: OPS 1 or 2.
Surface search: OPS 15 or 16.
Fire control: US Mk 34.

Sonar: Hull-mounted: OQS 12.
VDS: OQA 1 (103, 104, 110).

Training ships: *Isonami* and *Shikinami* converted 1975-76 to training ships in place of *Asahi* and *Hatsuhi.* 21-in torpedo tubes removed and lecture hall built in the space.

2 "HARUKAZE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
HARUKAZE	DD 101	Mitsubishi, Nagasaki	15 Dec 1954	20 Sep 1955	26 Apr 1956
YUKIKAZE	DD 102	Shin Mitsubishi, Kobe	17 Dec 1954	20 Aug 1955	31 July 1956

Displacement, tons: 1 700 standard; 2 340 full load
Dimensions, feet (metres): 358·5 × 34·5 × 12 *(109·3 × 10·5 × 3·7)*
Guns: 3—5 in *(127 mm)*/38 (single Mk 38);
8—40 mm (quad Mk 2)
A/S weapons: 2 Mk 4 torpedo tubes; 2 Hedgehogs; 4 K-guns; 1 DC rack (see *A/S weapons* note)
Main engines: 2 sets geared turbines;
Harukaze; 2 Mitsubishi Escher-Weiss;
Yukikaze; 2 Westinghouse; 2 shafts; 30 000 shp
Boilers: *Harukaze:* 2 Hitachi-Babcock; *Yukikaze:* 2 Combustion Engineering
Speed, knots: 30
Range, miles: 6 000 at 18 knots
Oil fuel, tons: 557
Complement: 240

Authorised under the 1953 programme. First destroyer hulled vessels built in Japan after the Second World War. Electric welding was extensively used in hull construction; development of weldable high tension steel in main hull and light alloy in superstructure were also new.
Nearly all the armament was supplied from the USA under the MSA clause.

A/S weapons: Mk 4 tubes use obsolete Mk 32 torpedoes.

Gunnery: US Mk 57 and 63 GFCS.
Experimental Contraves GFCS in *Harukaze.*

Modifications: *Yukikaze* has been modified for experimental duties. One 5-in (Y turret), four K-guns and one DC rack removed to make way for towed passive sonar array in 1975.

HARUKAZE *1979*

YUKIKAZE (after modification) *1979, Maritime Self-Defence Force*

Radar: Air search: SPS 6.
Surface search: OPS 37.
Fire control: US Mk 26 and 34.

Sonar: SQS 30J.

FRIGATES

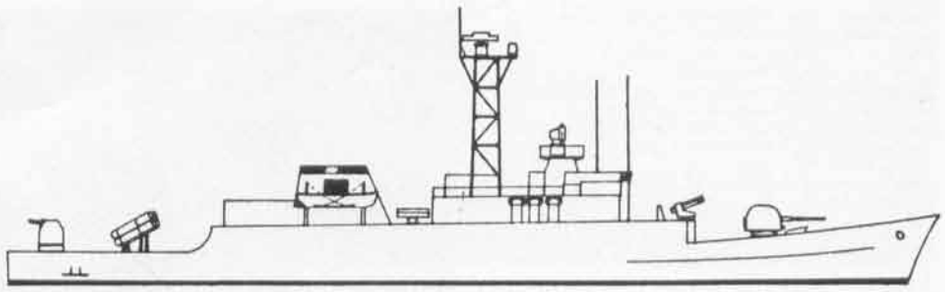
0 + 1 "DE 227" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
—	DE 277	—	Feb 1982	Feb 1983	Mar 1984

Displacement, tons: 1 400
Missiles: SSM; Harpoon
Guns: 1—76 mm OTO Melara Compact; CIWS
A/S weapons: Quad Bofors launcher;
6 (2 triple) Type 68 torpedo tubes
Main engines: Possibly same as "DE 226"

The "DE 227" design will be based on experience with *Ishikari* (DE 226). The design may well depart considerably from data given here. DE 227 approved in FY 1979 estimates—DE 228 proposed in FY 1980 estimates.

Costs: £31·5 million.



DE 227 *1978*

1 "ISHIKARI" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ISHIKARI	DE 226	Mitsui, Tamano	17 May 1979	18 Mar 1980	Mar 1981

Displacement, tons: 1 250 (see note)
Dimensions, feet (metres): 275·5 × 34·7 × 19·2
(84 × 10·6 × 5·9)
Missiles: SSM; 8 Harpoon (2 quad)
Gun: 1—76 mm OTO Melara Compact
A/S weapons: Quad Bofors launcher;
6 (2 triple) Type 68 torpedo tubes;
Main engines: CODOG; 1 Olympus TM3B; 22 500 shp;
one 6 DRV diesel; 4 700 shp; 2 shafts (cp propellers)
Speed, knots: 25

The Japanese have not constructed a frigate since the "Chikugo" class, which was designed in the early 1960s. The development of so many new systems since that time, probably dictated the need for a prototype. *Ishikari* was approved in the 1977 estimates.

ISHIKARI *11/1980, H. Kobayashi*

11 "CHIKUGO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
CHIKUGO	DE 215	Mitsui, Tamano	9 Dec 1968	13 Jan 1970	31 July 1970
AYASE	DE 216	Ishikawajima Harima	5 Dec 1969	16 Sep 1970	20 May 1971
MIKUMA	DE 217	Mitsui, Tamano	17 Mar 1970	16 Feb 1971	26 Aug 1971
TOKACHI	DE 218	Mitsui, Tamano	11 Dec 1970	25 Nov 1971	17 May 1972
IWASE	DE 219	Mitsui, Tamano	6 Aug 1971	29 June 1972	12 Dec 1972
CHITOSE	DE 220	Hitachi, Maizuru	7 Oct 1971	25 Jan 1973	31 Aug 1973
NIYODO	DE 221	Mitsui, Tamano	20 Sep 1972	28 Aug 1973	8 Feb 1974
TESHIO	DE 222	Hitachi, Maizuru	11 July 1973	29 May 1974	10 Jan 1975
YOSHINO	DE 223	Mitsui, Tamano	28 Sep 1973	22 Aug 1974	6 Feb 1975
KUMANO	DE 224	Hitachi, Maizuru	29 May 1974	24 Feb 1975	19 Nov 1975
NOSHIRO	DE 225	Mitsui, Tamano	27 Jan 1976	23 Dec 1976	31 Aug 1977

Displacement, tons: 1 470 (216, 217-219,221); 1 480 (215, 220); 1 500 (222 onwards)
Dimensions, feet (metres): 305·5 × 35·5 × 11·5
(93·1 × 10·8 × 3·5)
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33);
2—40 mm/60 (twin Mk 1)
A/S weapons: 1 US Mk 16 Octuple Asroc launcher;
6 (2 triple) Type 68 torpedo tubes
Main engines: 4 Mitsui Babcock & Wilcox diesels (215, 217, 218, 219, 221, 223, 225); 4 Mitsubishi UEV 30/40 N diesels (remainder); 2 shafts; 16 000 shp
Speed, knots: 25
Complement: 165

These are the smallest warships in the world to mount Asroc.

Gunnery: Mk 1 GFCS.

Radar: Air search: OPS 14.
Surface search: OPS 17.
Fire control: Mk 33.

Sonar: Hull-mounted: OQS 3.
VDS: SPS 35 J.

YOSHINO *5/1980, L. and L. van Ginderen*

4 "ISUZU" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ISUZU	DE 211	Mitsui, Tamano	16 Apr 1960	17 Jan 1961	29 July 1961
MOGAMI	DE 212	Mitsubishi, Nagasaki	4 Aug 1960	7 Mar 1961	28 Oct 1961
KITAKAMI	DE 213	Ishikawajima Harima, Tokyo	7 June 1962	21 June 1963	27 Feb 1964
OOI	DE 214	Maizuru	10 June 1962	15 June 1963	22 Jan 1964

Displacement, tons: 1 490 standard; 1 700 full load
Dimensions, feet (metres): 309·5 × 34·2 × 11·5 *(94·3 × 10·4 × 3·5*
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 4-barrelled Bofors rocket launcher; 6 (2 triple) Type 68 torpedo tubes; 1 Y-gun; 1 DC rack *(Ooi* and *Isuzu)*
Torpedo tubes: 4—21 in *(533 mm)* (quad)
Main engines: 4 diesels, Mitsui in *Ooi, Isuzu,* Mitsubishi in *Kitakami, Mogami,* 16 000 hp; 2 shafts
Speed, knots: 25
Complement: 180

Gunnery: US Mk 63 GFCS.

Modernisation: In 1966 *(Mogami)* and 1968 *(Kitakami)* one Y-gun and DC racks removed for VDS. *Isuzu* (1974-75), *Mogami* (1974) and second pair (1975-76) modified for new Bofors rocket launcher.

Radar: Air search: OPS 1.
Surface search: OPS 16.
Fire control: US Mk 34.

MOGAMI *1979*

Sonar: Hull-mounted: SQS 29.
VDS: OQA 1 (212-213).

LIGHT FORCES

8 "MIZUTORI" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Laid down	Launched	Commissioned
MIZUTORI	311	Kawasaki, Kobe	13 Mar 1959	22 Sep 1959	27 Feb 1960
YAMADORI	312	Fujinagata, Osaka	14 Mar 1959	22 Oct 1959	15 Mar 1960
OTORI	313	Kure Shipyard	16 Dec 1959	27 May 1960	13 Oct 1960
KASASAGI	314	Fujinagata, Osaka	18 Dec 1959	31 May 1960	31 Oct 1960
HATSUKARI	315	Sasebo	25 Jan 1960	24 June 1960	15 Nov 1960
UMIDORI	316	Sasebo	15 Feb 1962	15 Oct 1962	30 Mar 1963
SHIRATORI	319	Sasebo	29 Feb 1964	8 Oct 1964	26 Feb 1965
HIYODORI	320	Sasebo	26 Feb 1965	25 Sep 1965	28 Feb 1966

Displacement, tons: 420 to 440 standard
Dimensions, feet (metres): 197 × 23·3 × 7·5 *(60 × 7·1 × 2·3)*
Guns: 2—40 mm/60 (twin Mk 1)
A/S weapons: 1 Hedgehog; 1 DC rack; 6 (2 triple) Type 68 torpedo tubes (316, 319, 320); 2 Mk 4 torpedo tubes (remainder)
Main engines: 2 MAN diesels; 2 shafts; 3 800 bhp = 20 knots
Range, miles: 2 000 at 12 knots
Complement: 80

Gunnery: Mk 63 GFCS.

Radar: Surface search: OPS 35 (311-312); OPS 36 (313-316); OPS 16 (319-320).

Sonar: SQS 11A.

KASASAGI *5/1980, L. and L. van Ginderen*

3 "UMITAKA" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Laid down	Launched	Commissioned
OTAKA	310	Kure Shipyard	18 Mar 1959	3 Sep 1959	14 Jan 1960
WAKATAKA	317	Kure Shipyard	5 Mar 1962	13 Nov 1962	30 Mar 1963
KUMATAKA	318	Fujinagata, Osaka	20 Mar 1963	21 Oct 1963	25 Mar 1964

Displacement, tons: 440 to 460 standard
Dimensions, feet (metres): 197 × 23·3 × 8 *(60 × 7·1 × 2·4)*
Guns: 2—40 mm/60 (twin Mk 1)
A/S weapons: 1 Hedgehog; 1 DC rack; 6 (2 triple) Type 68 torpedo tubes (317, 318); 2 Mk 4 torpedo tubes (310)
Main engines: 2 Babcock & Wilcox diesels; 2 shafts; 4 000 bhp = 20 knots
Range, miles: 3 000 at 12 knots
Complement: 80

Gunnery: Mk 63 GFCS.

Radar: Surface search: OPS 35 (310); OPS 36 (317); OPS 16 (318).

Sonar: SQS 11A.

WAKATAKA *1976, Maritime Self-Defence Force*

5 FAST ATTACK CRAFT—TORPEDO

Name	No.	Builders	Commissioned
PT 11	811	Mitsubishi, Shimonoseki	27 Mar 1971
PT 12	812	Mitsubishi, Shimonoseki	28 Mar 1972
PT 13	813	Mitsubishi, Shimonoseki	16 Dec 1972
PT 14	814	Mitsubishi, Shimonoseki	15 Feb 1974
PT 15	815	Mitsubishi, Shimonoseki	10 July 1975

Displacement, tons: 135
Dimensions, feet (metres): 116·4 × 30·2 × 3·9 *(35·5 × 9·2 × 1·2)*
Guns: 2—40 mm (single Mk 3)
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: CODAG; 2 Mitsubishi diesels; 2 IHI gas turbines; 3 shafts; 11 000 hp (PT 11; 10 500 hp) = 50 knots
Complement: 26-28

Laid down on 17 March 1970, 22 April 1971, 28 March 1972, 23 March 1973, and 23 April 1974 respectively.

Radar: OPS 13.

PT 14 *1976, Maritime Self-Defence Force*

9 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
PB 19	919	Ishikawajima, Yokohama	31 Mar 1971
PB 20	920	Ishikawajima, Yokohama	31 Mar 1971
PB 21	921	Ishikawajima, Yokohama	31 Mar 1971
PB 22	922	Ishikawajima, Yokohama	31 Mar 1971
PB 23	923	Ishikawajima, Yokohama	31 Mar 1972
PB 24	924	Ishikawajima, Yokohama	31 Mar 1972
PB 25	925	Ishikawajima, Yokohama	29 Mar 1973
PB 26	926	Ishikawajima, Yokohama	29 Mar 1973
PB 27	927	Ishikawajima, Yokohama	29 Mar 1973

Displacement, tons: 18
Dimensions, feet (metres): 55·8 × 14·1 × 2·7 *(17 × 4·3 × 0·8)*
Gun: 1—20 mm
Main engines: 2 diesels; 760 hp = 20 knots
Complement: 6

GRP hulls.

Radar: OPS 29.

PB 22 *11/1975*

Name	*No.*	*Builders*	*Commissioned*
KOSOKU 6	06	Mitsubishi, Shimonoseki	20 Mar 1967

Displacement, tons: 40
Dimensions, feet (metres): 75·9 × 18·2 × 3·3 *(23·1 × 5·6 × 1)*
Main engines: 3 diesels; 2 800 bhp = 30 knots

Of aluminium construction. Laid down on 28 June 1966 under the 1965 programme. Launched 22 November 1966.

Radar: OPS 4C.

KOSOKU 6 *1974, Maritime Self-Defence Force*

3 "ATSUMI" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
ATSUMI	4101	Sasebo Heavy Industries	27 Nov 1972
MOTOBU	4102	Sasebo Heavy Industries	21 Dec 1973
NEMURO	4103	Sasebo Heavy Industries	27 Oct 1977

Displacement, tons: 1 480 *(Atsumi)*; 1 550 *(Motobu)*; 1 500 *(Nemuro)*
Dimensions, feet (metres): 291·9 × 42·6 × 8·5 *(89 × 13 × 2·6)*
Guns: 4—40 mm (twins)
Main engines: 2 diesels; 4 400 hp = 13 knots *(Motobu)* = 14 knots *(Atsumi)*
Complement: 100 *(Atsumi)*; 95 *(Motobu)*

Atsumi laid down 7 December 1971, launched 13 June 1972. *Motobu* laid down 23 April 1973, launched 3 August 1973. *Nemuro* laid down 18 November 1976; launched 16 June 1977. Accommodation for 130 troops.

Radar: OPS 9.

NEMURO *1979, Maritime Self-Defence Force*

2 + 1 "YURA" CLASS (LSUs)

Name	*No.*	*Builders*	*Commissioned*
YURA	4171	Sasebo Heavy Industries	Mar 1981
NOTO	4172	Sasebo Heavy Industries	Mar 1981
—	4173	Sasebo Heavy Industries	—

Displacement, tons: 590
Dimensions, feet (metres): 190·2 × 31·2 × 5·6 *(58 × 9·5 × 1·7)*
Gun: 1—Phalanx CIWS
Main engines: 2 diesels = 12 knots
Complement: 32

Both 4171 and 4172 laid down 23 April 1980. *Yura* launched 15 October 1980 and *Noto* on 12 November 1980.

AMPHIBIOUS FORCES

3 "MIURA" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
MIURA	4151	Ishikawajima Harima, Tokyo	29 Jan 1975
OJIKA	4152	Ishikawajima Harima, Tokyo	22 Mar 1976
SATSUMA	4153	Ishikawajima Harima, Tokyo	17 Feb 1977

Displacement, tons: 2 000
Dimensions, feet (metres): 321·4 × 45·9 × 9·8 *(98 × 14 × 3)*
Guns: 2—3 in *(76 mm)* (twin); 2—40 mm (twin)
Main engines: 2 Kawasaki/MAN V8V 22/30 ATL diesels; 2 shafts; 4 400 hp = 14 knots
Complement: 115

Miura laid down 26 November 1973, launched 13 August 1974. *Ojika* laid down 10 June 1974, launched 2 September 1975. *Satsuma* laid down 26 May 1975, launched 12 May 1976. Carry two LCMs and two LCVPs, ten type 74 tanks. Accommodation for 200 troops.

Radar: OPS 14; OPS 18.

MIURA *1976, Maritime Self-Defence Force*

MINE WARFARE FORCES

1 "SOUYA" CLASS (MINESWEEPER SUPPORT SHIP)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SOUYA	951	Hitachi, Maizuru	9 July 1970	31 Mar 1971	30 Sep 1971

Displacement, tons: 2 150 standard; 3 050 full load
Dimensions, feet (metres): 324·8 × 49·5 × 13·9 *(99 × 15 × 4·2)*
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33); 2—20 mm
A/S weapons: 6 (2 triple) Type 68 A/S torpedo tubes
Main engines: 4 diesels; 4 000 bhp; 2 shafts
Speed, knots: 18
Complement: 185

With twin rails can carry 200 buoyant mines. Has helicopter platform aft and acts at times as command ship for MCM forces.

Fire control: GFCS Mk 1.

Radar: OPS 14; OPS 16.

Sonar: SQS 11A.

SOUYA *1974, Maritime Self-Defence Force*

1 "HAYASE" CLASS (MINESWEEPER SUPPORT SHIP)

Name	No.	Builders	Commissioned
HAYASE	462	Ishikawajima, Haruna	6 Nov 1971

Displacement, tons: 2 000 standard
Dimensions, feet (metres): 324·8 × 42·7 × 12·5 *(99 × 13 × 3·8)*
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33); 2—20 mm
A/S weapons: 6 (2 triple) Type 68 A/S torpedo tubes
Main engines: 2 diesels; 4 000 bhp; 2 shafts
Speed, knots: 18
Complement: 180

Laid down 16 September 1970, launched 21 June 1971. Has helicopter platform aft.

Radar: OPS 14; OPS 16.

Sonar: SQS 11A.

HAYASE *1978*

7 + 2 "HATSUSHIMA" CLASS (MINESWEEPERS—COASTAL)

Name	No.	Builders	Commissioned
HATSUSHIMA	MSC 649	Nippon Steel Tube Co (Isogo)	30 Mar 1979
NINOSHIMA	MSC 650	Hitachi, Kanagawa	29 Dec 1979
MIYAJIMA	MSC 651	Nippon Steel Tube Co (Isogo)	29 Jan 1980
ENOSHIMA	MSC 652	Nippon Steel Tube Co (Isogo)	25 Dec 1980
UKISHIMA	MSC 653	Hitachi, Kanagawa	27 Nov 1980
—	MSC 654	Hitachi, Kanagawa	Nov 1981
—	MSC 655	Nippon Steel Tube Co (Isogo)	Nov 1981
—	—	—	Nov 1982
—	—	—	Nov 1982

Displacement, tons: 440 standard
Dimensions, feet (metres): 180·4 × 30·8 × 7·9 *(55 × 9·4 × 2·4)*
Gun: 1—20 mm Oerlikon (1—Phalanx CIWS from *Ukishima* onwards)
Main engines: 2 diesels; 2 shafts; 1 440 bhp = 14 knots
Complement: 45

Fitted with new S4 mine detonating equipment, a remote-controlled counter-mine charge. *Hatsushima* ordered under 1976 programme. Contract signed 31 March 1977. *Ninoshima* and *Miyajima* ordered under FY 1977 programme, 652 and 653 under FY 1978, 654 and 655 under FY 1979, two more under FY 1980. Laid down 6 December 1977 (649), 8 May 1978 (650), 8 November 1978 (651), October 1979 (652), 15 May 1979 (653), 2 June 1980 (654), 4 August 1980 (655). Launch dates, 30 October 1978 (649), 7 August 1979 (650), 18 September 1979 (651), August 1980 (652), June 1980 (653), June 1981 (654, 655).

UKISHIMA *11/1980, H. Kobayashi*

19 "TAKAMI" CLASS (MINESWEEPERS—COASTAL)

Name	No.	Builders	Commissioned
TAKAMI	MSC 630	Hitachi, Kanagawa	15 Dec 1969
IOU	MSC 631	Nippon Steel Tube Co	22 Jan 1970
MIYAKE	MSC 632	Hitachi, Kanagawa	19 Nov 1970
UTONE	MSC 633	Nippon Steel Tube Co	3 Sep 1970
AWAJI	MSC 634	Hitachi, Kanagawa	29 Mar 1971
TOUSHI	MSC 635	Nippon Steel Tube Co	18 Mar 1971
TEURI	MSC 636	Hitachi, Kanagawa	10 Mar 1972
MUROTSU	MSC 637	Nippon Steel Tube Co	3 Mar 1972
TASHIRO	MSC 638	Hitachi, Kanagawa	30 July 1973
MIYATO	MSC 639	Nippon Steel Tube Co	24 Aug 1973
TAKANE	MSC 640	Hitachi, Kanagawa	28 Aug 1974
MUZUKI	MSC 641	Nippon Steel Tube Co	28 Aug 1974
YOKOSE	MSC 642	Hitachi, Kanagawa	15 Dec 1975
SAKATE	MSC 643	Nippon Steel Tube Co	17 Dec 1975
OUMI	MSC 644	Hitachi, Kanagawa	18 Nov 1976
FUKUE	MSC 645	Nippon Steel Tube Co	18 Nov 1976
OKITSU	MSC 646	Hitachi, Kanagawa	20 Sep 1977
HASHIRA	MSC 647	Nippon Steel Tube Co (Isogo)	28 Mar 1978
IWAI	MSC 648	Hitachi, Kanagawa	28 Mar 1978

Of similar dimensions to "Kasado" class below but of slightly different construction and with a displacement of 380 tons.
As minehunters fitted with mine-detecting sonar and carry four clearance divers.
Laid down—*Okitsu* 26 April 1976, *Hashira* 22 February 1977; *Iwai* 20 July 1976.
Launch dates—*Okitsu* 4 March 1977, *Hashira* 8 November 1977, *Iwai* 24 November 1977.

Radar: OPS 9.

Sonar: SQS 2.

UTONE *8/1980, H. Kobayashi*

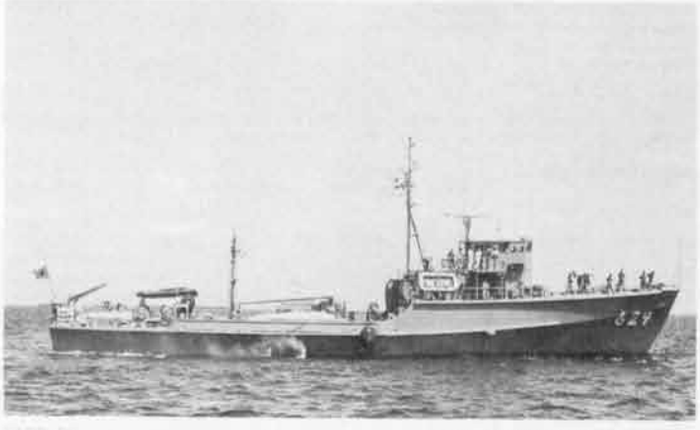
9 "KASADO" CLASS (MINESWEEPERS—COASTAL)

Name	No.	Builders	Commissioned
OOTSU	MSC 621	Nippon Steel Tube Co	24 Feb 1965
KUDAKO	MSC 622	Hitachi, Kanagawa	24 Mar 1965
RISHIRI	MSC 623	Nippon Steel Tube Co	5 Mar 1966
REBUN	MSC 624	Hitachi, Kanagawa	24 Mar 1966
AMAMI	MSC 625	Nippon Steel Tube Co	6 Mar 1967
URUME	MSC 626	Hitachi, Kanagawa	30 Jan 1967
MINASE	MSC 627	Nippon Steel Tube Co	25 Mar 1967
IBUKI	MSC 628	Hitachi, Kanagawa	27 Feb 1968
KATSURA	MSC 629	Nippon Steel Tube Co	15 Feb 1968

Displacement, tons: 330 standard; (380 later ships); 448 full load (later ships)
Dimensions, feet (metres): 150·9 × 28 × 7·5 *(46 × 8·5 × 2·3)*; 171·6 × 28·9 × 7·9 *(52·3 × 8·8 × 2·4)* later ships
Gun: 1—20 mm
Main engines: 2 diesels; 2 shafts; 1 200 bhp (1 440 later ships) = 14 knots
Complement: 43 (47 in later ships)

Originally a class of 26 ships. Hull is of wooden construction. Otherwise built of non-magnetic materials. 17 of this class converted as MCM support ship (1), survey craft (5), Explosive Ordnance Disposal (EOD) Unit (diving tenders) (6) and tenders (5). *Ootsu* to be converted as MCM support ship.

Radar: OPS 9 or OPS 4.



KATSURA *1979, Maritime Self-Defence Force*

1 "KOUZU" CLASS (MCM SUPPORT SHIP)

KOUZU MST 473 (ex-*MSC 609*)

Similar to "Kasado" class but has had minesweeping gear removed and was fitted as MCM command ship in June 1972. Used as tender for "Nana-Go" class MSBs.

KOUZU *1979*

6 "NANA-GO" CLASS (MSBs)

Name	No.	Builders	Commissioned
NANA-GO	707	Hitachi, Kanagawa	30 Mar 1973
HACHI-GO	708	Nippon Steel Tube Co	27 Mar 1973
KYUU-GO	709	Hitachi, Kanagawa	28 Mar 1974
JYUU-GO	710	Nippon Steel Tube Co	29 Mar 1974
JYUU-ICHI-GO	711	Hitachi, Kanagawa	10 May 1975
JYUU-NI-GO	712	Nippon Steel Tube Co	22 Apr 1975

Displacement, tons: 53
Dimensions, feet (metres): 73·8 × 17·7 × 3·3 *(22·5 × 5·4 × 1)*
Main engines: 2 Mitsubishi diesels; 480 hp = 11 knots
Complement: 10

Laid down 26 May 1972, 3 August 1972, 5 July 1973, 7 June 1973, 2 July 1974, respectively. *Jyuu-Ni-Go* launched 27 January 1975. No radar.

HACHI-GO *1979*

SERVICE FORCES

1 TRAINING SUPPORT SHIP

Name	No.	Builders	Commissioned
AZUMA	ATS 4201	Maizuru	26 Nov 1969

Displacement, tons: 1 950 standard; 2 500 full load
Dimensions, feet (metres): 323·4 × 42·7 × 12·5 *(98·6 × 13 × 3·8)*
Aircraft: 1 helicopter, 3 jet drones, 10 propeller drones
Gun: 1—3 in *(76 mm)*/50
A/S weapons: 2 A/S Mk 4 torpedo launchers
Main engines: 2 diesels; 2 shafts; 4 000 bhp
Speed, knots: 18
Complement: 140

Laid down on 15 July 1968, launched on 14 April 1969. Has drone hangar amidships and catapult on flight deck. Can operate towed target. Training support ship for AA gunnery.

Radar: OPS 16; SPS 40.

Sonar: SQS 11A.

AZUMA *1974, Maritime Self-Defence Force*

1 TRAINING SHIP

Name	No.	Builders	Commissioned
KATORI	3501	Ishikawajima Harima, Tokyo	10 Sep 1969

Displacement, tons: 3 350 standard; 4 000 full load
Dimensions, feet (metres): 422·4 × 49·5 × 14·6 *(128·7 × 15·5 × 4·5)*
Guns: 4—3 in *(76 mm)*/50 (single)
A/S weapons: One 4-barrelled rocket launcher; 6 (2 triple) Type 68 torpedo tubes
Main engines: Geared turbines; 2 shafts; 20 000 shp
Speed, knots: 25
Range, miles: 7 000 at 18 knots
Complement: 460 (295 ship's company and 165 trainees)

Laid down 8 December 1967, launched on 19 November 1968. Provided with a landing deck aft of 30 × 13 metres for a helicopter and large auditorium for trainees amidships. Used for training midshipmen.

Radar: Search: OPS 17. Tactical: SPS 12.

Sonar: SQS 4.

KATORI *8/1979, Wright and Logan*

1 EOD TENDER

Name	No.	Builders	Commissioned
ERIMO	YAS 69 (ex-*AMC 491*)	Uraga	28 Dec 1955

Displacement, tons: 630 standard
Dimensions, feet (metres): 210 × 26 × 8 *(64 × 7·9 × 2·4)*
Guns: 2—40 mm; 2—20 mm
A/S weapons: 1 Hedgehog; 2 K-guns; 2 DC racks
Main engines: Diesel; 2 shafts; 2 500 bhp = 18 knots
Complement: 80

Conversion to tender for Explosive Ordnance Disposal (EOD) Unit (Mine Hunting Diver) completed March 1976.

ERIMO *1978*

6 EOD TENDERS

SHISAKA (ex-*MSC 605*) YAS 62
SAKITO (ex-*MSC 607*) YAS 64
TSUKUMI (ex-*MSC 611*) YAS 66
SHIKINE (ex-*MSC 613*) YAS 68
HOTAKA (ex-*MSC 616*) YAS 70
KARATO (ex-*MSC 617*) YAS 71

Of "Kasado" class (see Mine Warfare section for details) transferred after conversion to Explosive Ordnance Disposal (EOD) Unit (Mine Hunting Diver) duties which includes removal of minesweeping gear to provide for divers room and equipment. Position of radar aerial varies between ships.

SHISAKA *1978*

1 NEW CONSTRUCTION (SUBMARINE RESCUE SHIP)

Displacement, tons: 3 600
Dimensions, feet (metres): 351 × 59 × 26·2 *(107 × 18 × 8)*
Main engines: 2 diesels; 2 shafts = 16 knots

Provided for in FY 1981 programme. To carry a Deep Submergence Recovery Vehicle (DSRV) of 40 tons, 39·4 × 10·5 × 10·5 ft *(12 × 3·2 × 3·2 m)* with a speed of four knots. This ship is planned to relieve *Chihaya*.

1 SUBMARINE RESCUE SHIP

Name	No.	Builders	Commissioned
FUSIMI	ASR 402	Sumitomo, Uraga	10 Feb 1970

Displacement, tons: 1 430 standard
Dimensions, feet (metres): 249·5 × 41 × 12 *(76 × 12·5 × 3·7)*
Main engines: 2 diesels; 1 shaft; 3 000 bhp = 16 knots
Complement: 100

Laid down on 5 November 1968, launched 10 September 1969. Has a rescue chamber and two recompression chambers.

Radar: OPS 9.

Sonar: SQS 11A.

FUSIMI *1976, Maritime Self-Defence Force*

1 SUBMARINE RESCUE SHIP

Name	*No.*	*Builders*	*Commissioned*
CHIHAYA	ASR 401	Mitsubishi, Yokohama	15 Mar 1961

Displacement, tons: 1 340 standard
Dimensions, feet (metres): 239·5 × 39·3 × 12·7 *(73 × 12 × 3·9)*
Main engines: Diesels; 2 700 bhp = 15 knots
Complement: 90

Authorised under the 1959 programme. The first vessel of her kind to be built in Japan. Laid down on 15 March 1960. Launched on 4 October 1960. Has rescue chamber, two recompression chambers, four-point mooring equipment and a 12 ton derrick.

Radar: OPS 4.

Replacement: A 3 600 ton ASR fitted to carry a Deep Submergence Recovery Vehicle (DSRV) has been provided for in the FY 1981 programme (see previous page).

Sonar: SQS 11A.

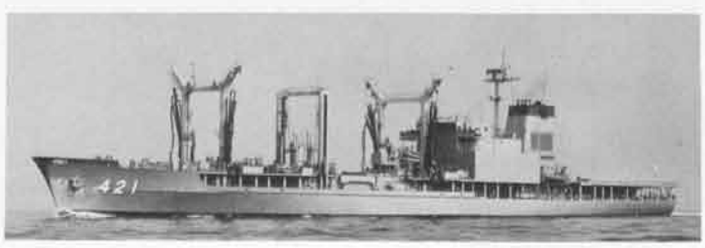
CHIHAYA *1976, Maritime Self-Defence Force*

1 FLEET SUPPORT SHIP

Name	*No.*	*Builders*	*Commissioned*
SAGAMI	AOE 421	Hitachi, Maizuru	30 Mar 1979

Displacement, tons: 5 000
Dimensions, feet (metres): 478·9 × 62·3 × 35·4 *(146 × 19 × 10·8)*
Main engines: 2 diesels; 2 shafts; 18 600 bhp
Speed, knots: 22
Range, miles: 9 500 at 20 knots
Complement: 130

Merchant type hull. Included in 1976 estimates. Ordered December 1976. Laid down 28 September 1977, launched 4 September 1978. Has six re-supply stations each side. No armament but can be fitted. Helicopter platform but no hangar.



SAGAMI *7/1980, H. Kobayashi*

1 SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
HAMANA	AO 411	Uraga	10 Mar 1962

Displacement, tons: 2 900 light; 7 550 full load
Dimensions, feet (metres): 420 × 51·5 × 20·5 *(128 × 15·7 × 6·3)*
Guns: 2—40 mm
Main engine: 1 diesel; 5 000 bhp; 1 shaft = 16 knots
Complement: 100

Built under the 1960 programme. Laid down on 17 April 1961, launched on 24 October 1961. Refitted 1979—fitted with two additional fuelling gantries.

24 HARBOUR TANKERS

Note: In addition to those listed below there are five of 490 tons, four of 300 tons, four of 290 tons, three of 270 tons and six of 100 tons.

Name	*No.*	*Builder*	*Commissioned*
—	YO 201	Usuki Tekko	30 Mar 1978

Displacement, tons: 270
Dimensions, feet (metres): 120·5 × 22·3 × 8·9 *(36·7 × 6·8 × 2·7)*
Main engine: 1 diesel; 350 hp = 9 knots

Laid down 15 November 1976.

Name	*No.*	*Builder*	*Commissioned*
—	YO 14	Yoshiura Zosen	31 Mar 1976

Displacement, tons: 490
Dimensions, feet (metres): 144 × 25·6 × 10·2 *(43·9 × 7·8 × 3·1)*
Main engines: 2 diesels; 400 hp = 8 knots

Laid down 12 December 1975.

1 SALVAGE VESSEL

Name	*No.*	*Builders*	*Commissioned*
SHOBO 1	YE 41	Azumo, Yokosuka	28 Feb 1964

Displacement, tons: 45
Dimensions, feet (metres): 75 × 18 × 3·3 *(22·9 × 5·5 × 1)*
Main engines: Diesels; 3 shafts; speed = 19 knots
Complement: 8

Four fixed fire hoses fitted. Now on auxiliary list. Used as rescue and salvage ship for A/S Flying Boats.

1 CABLE LAYER

Name	*No.*	*Builders*	*Commissioned*
MUROTO	ARC 482	Mitsubishi, Shimonoseki	27 Mar 1980

Displacement, tons: 4 500
Dimensions, feet (metres): 429·7 × 57·1 × 18·7 *(131 × 17·4 × 5·7)*
Main engines: 4 diesels; 8 000 hp; 2 shafts = 17 knots
Complement: 135

To replace *Tsugaru*. Ocean survey capability.
Laid down 28 November 1978, launched 25 July 1979.

MUROTO *12/1979, H. Kobayashi*

1 CABLE LAYER

Name	*No.*	*Builders*	*Commissioned*
TSUGARU	ASU 7001	Yokohama Shipyard	15 Dec 1955

Displacement, tons: 2 150 standard
Dimensions, feet (metres): 337·8 × 40·7 × 16 *(103 × 12·4 × 4·9)*
Guns: 2—20 mm
Main engines: 2 diesels; 2 shafts; 3 200 bhp = 13 knots
Complement: 103

Dual purpose cable layer and coastal minelayer. Built under the 1953 programme. Laid down on 18 December 1954. Launched on 19 July 1955. Converted to cable-layer 10 July 1969-30 April 1970 by Nippon Steel Tube Co.

TSUGARU *3/1980, Ships of the World*

SURVEYING AND EXPERIMENTAL SHIPS

1 NEW CONSTRUCTION

Name	*No.*	*Builders*	*Commissioned*
—	AGS 5103	Hitachi Zosen, Kanagawa	Mar 1982

Displacement, tons: 1 100
Dimensions, feet (metres): 236·2 × 42 × 11·5 *(72 × 12·8 × 3·5)*
Main engines: 2 diesels = 15 knots

Laid down November 1980 for launching in September 1981.

1 "KURIHAMA" CLASS (ASE)

Name	*No.*	*Builders*	*Commissioned*
KURIHAMA	ASE 6101	Sasebo H.I.	8 Apr 1980

Displacement, tons: 950 standard
Dimensions, feet (metres): 223 × 37·9 × 9·8 *(68 × 11·6 × 3)*
Main engine: Diesel; 2 600 hp = 15 knots
Complement: 38 plus 12 observers

Experimental ship built for the Technical Research and Development Unit. Laid down 23 March 1979 and launched 20 September 1979.

KURIHAMA *8/1980, Ziro Kimata*

1 "FUTAMI" CLASS (AGS)

Name	*No.*	*Builders*	*Commissioned*
FUTAMI	AGS 5102	Mitsubishi, Shimonoseki	27 Feb 1979

Displacement, tons: 2 050
Dimensions, feet (metres): 317·5 × 49·2 × 24·9 *(96·8 × 15 × 7·6)*
Main engines: 2 diesels; 2 shafts; 4 400 hp = 16 knots
Range, miles: 14 000 at 14 knots
Complement: 105

Ordered 26 December 1976. Laid down 20 January 1978. Launched 9 August 1978. Built to merchant marine design. Bow-thruster.

Radar: OPS 18.

FUTAMI *1/1981, H. Kobayashi*

1 "AKASHI" CLASS (AGS)

Name	*No.*	*Builders*	*Commissioned*
AKASHI	AGS 5101	Nippon Steel Tube Co	25 Oct 1969

Displacement, tons: 1 420
Dimensions, feet (metres): 244·2 × 42·2 × 14·2 *(74 × 13 × 4·3)*
Main engines: 2 diesels; 2 shafts; 3 200 bhp
Speed, knots: 16
Range, miles: 16 500 at 14 knots
Complement: 65

Laid down 21 September 1968. Launched 30 May 1969.

Radar: OPS 9.

AKASHI *1979*

5 Ex-"KASADO" CLASS (AGSs)

Name	*No.*
ICHI-GO (ex-*Kasado* MSC 604)	5111
NI-GO (ex-*Habushi* MSC 608)	5112
SAN-GO (ex-*Tatara* MSC 610)	5113
YON-GO (ex-*Hirado* MSC 614)	5114
GO-GO (ex-*Hario* MSC 618)	5115

Displacement, tons: 330 standard
Dimensions, feet (metres): 150·9 × 28 × 7·5 *(46 × 8·5 × 2·3)*
Main engines: 2 diesels; 2 shafts; 1 200 bhp = 14 knots

SAN-GO *1978*

TENDERS

5 "500 TON" CLASS

Name	*Laid down*	*Launched*	*Commissioned*
ASU 81	10 Oct 1967	18 Jan 1968	30 Mar 1968
ASU 82	25 Sep 1968	20 Dec 1968	31 Mar 1969
ASU 83	2 Apr 1971	24 May 1971	30 Sep 1971
ASU 84	4 Feb 1972	15 June 1972	13 Sep 1972
ASU 85	20 Feb 1973	16 July 1973	19 Sep 1973

Displacement, tons: 500
Dimensions, feet (metres): 171·6 × 33 × 8·3 *(52·3 × 10·1 × 2·5)*
Main engines: 2 diesels; 2 shafts; 1 600 bhp = 14 knots

Training support and rescue.

Radar: OPS 19 (85); OPS 29 (84); OPS 10 (remainder).

ASU 83 *7/1980, H. Kobayashi*

1 "HAYABUSA" CLASS

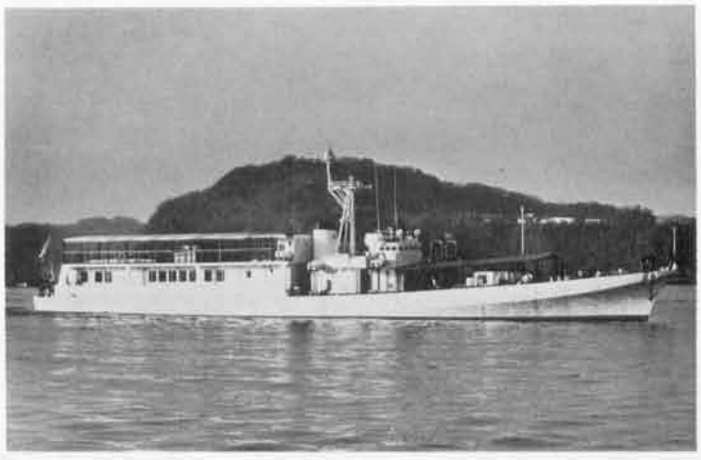
Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
HAYABUSA	ASY 91	Mitsubishi, Nagasaki	23 May 1956	20 Nov 1956	10 June 1957

Displacement, tons: 400 standard
Dimensions, feet (metres): 190·2 × 25·7 × 7 *(58 × 7·8 × 2·2)*
Main engines: 2 diesels; 1 000 bhp; 2 shafts = 13 knots
Complement: 35 (125 passengers)

Built under the 1954 fiscal year programme.
A gas turbine was installed in March 1962 and removed in 1970. Reconstructed as ASY (Auxiliary Special Service Yacht) between 20 November 1977 and 15 April 1978 at Yokohama Yacht Co Ltd.

Radar: Surface search; OPS 37.

Sonar: SQS 11A.



HAYABUSA *12/1980, H. Kobayashi*

6 Ex-"KASADO" and 1 "YASHIRO" CLASSES

Name	No.	Builders	Commissioned
YASHIRO (ex-*MSC 603*)	YAS 58	Nippon Steel Tube Co	10 July 1956
KOSHIKI (ex-*MSC 615*)	YAS 63	Nippon Steel Tube Co	29 Jan 1962
KANAWA (ex-*MSC 606*)	YAS 65	Hitachi, Kanagawa	24 July 1959
MIKURA (ex-*MSC 612*)	YAS 67	Nippon Steel Tube Co	27 May 1960
KARATO (ex-*MSC 617*)	YAS 71	Nippon Steel Tube Co	23 Mar 1963
MUTSURE (ex-*MSC 619*)	YAS 73	Nippon Steel Tube Co	24 Mar 1964
CHIBURI (ex-*MSC 620*)	YAS 74	Hitachi, Kanagawa	25 Mar 1964

Details as for "Kasado" class under Mine Warfare Forces except for *Yashiro* of 230 tons. *Karato* operates for the Explosive Ordnance Disposal (EOD) Unit.

KARATO *1979*

ICEBREAKERS

1 NEW CONSTRUCTION

Name	No.	Builders	Commissioned
—	5002	Nippon Steel Tube Co, Tsurumi	Nov 1982

Displacement, tons: 11 660 standard; 17 600 full load
Dimensions, feet (metres): 439·5 × 91·8 × 30·5 *(134 × 28 × 9·3)*
Aircraft: 3 helicopters (2—CH53, 1—OH-6)
Main engines: Diesel electric; 5 MAN diesel generators; 3 shafts; 30 000 hp = 19 knots
Complement: 174 plus 60 scientists and observers

Laid down March 1981 and launched December 1981. Cargo capacity 1 000 tons.

Name	No.	Builders	Commissioned
FUJI	5001	Nippon Steel Tube Co	15 July 1965

Displacement, tons: 5 250 standard; 7 760 normal; 8 566 full load
Dimensions, feet (metres): 328 × 72·2 × 29 *(100 × 22 × 8·8)*
Aircraft: 3 helicopters
Main engines: 4 diesel-electric; 2 shafts; 12 000 bhp = 17 knots
Oil fuel, tons: 1 900
Range, miles: 15 000 at 15 knots
Complement: 200 plus 35 scientists and observers

Antarctic support ship. Laid down on 28 August 1964, launched on 18 March 1965. Hangar and flight deck aft. Can cope with ice up to 8·5 ft *(2·5 m)*.

Radar: OPS 4; OPS 16.

Sonar: SQS 11A.

FUJI *1975, Maritime Self-Defence Force*

TUGS

YT 53, YT 55, YT 56, YT 57, YT 58

Displacement, tons: 195 (YT 58, 260 tons)
Dimensions, feet (metres): 84·8 × 23 × 7·5 *(25·7 × 7 × 2·3)*
(YT 58: 93 × 28 × 11·2 *(28·4 × 8·6 × 3·5)*)
Main engines: 2 diesels; 1 000 hp = 11 knots (YT 58 1 800 hp = 11 knots)
Complement: 15 (YT 58, 10)

YT 53 entered service on 8 March 1975, YT 55 on 22 August 1975, YT 56 on 13 July 1976, YT 57 on 22 August 1977, YT 58 on 31 October 1978.

8 "100 TON" CLASS

21 HARBOUR TUGS

Of varying sizes from 21-30 tons.

MARITIME SAFETY AGENCY
(KAIJO HOANCHO)

Commandant: Hiroto Senoo

Establishment

Established in May 1948 as an external organisation of the Ministry of Transport to carry out patrol and rescue duties as well as hydrographic and navigation aids services.

Over the last 30 years a very considerable organisation with HQ in Tokyo has been built up. The Academy for the Agency is in Kure and the School in Maizuru.
The main operational branches are the Guard and Rescue Dept, the Hydrographic Dept and the Navigation Aids Dept. Regional Maritime Safety offices control the 11 Districts with their location as follows (air bases in brackets): RMS 1—Otaru (Chitose, Hakodate, Kushiro); 2—Shiogama (Sendai); 3—Yokohama (Haneda); 4—Nagoya (Ise); 5—Kobe (Yao); 6—Hiroshima (Hiroshima); 7—Kitakyushu (Fukuoka); 8—Maizuru (Miho); 9—Niigata (Niigata); 10—Kagoshima (Kagoshima); 11—Naha (Naha, Ishigaki). This organisation includes, as well as the RMS HQ, 65 MS officers, 51 MS Bases, 25 MS Detachments, 5 District Communication Centres, 1 Traffic Advisory Service Centre, 4 Hydrographic Observatories and 140 Navigation Aids offices.

Personnel

1978: 11 452
1979: 11 661
1980: 14 793

New Construction

Under FY 1980 programme 23 vessels are to be acquired, including one 1 000 ton PL with helicopter, two 1 000 ton PLs, three 500 ton PMs and six 30 metre PCs and one 23 metre PC.

Budget

FY 1977: 76 843 million yen
FY 1978: 99 776 million yen
FY 1979: 114 178 million yen
FY 1980: 112 758 million yen

Strength of the Fleet

Type	Active
GUARD AND RESCUE SERVICE	
Patrol Vessels:	
Large (PL)	39
Medium (PM)	47
Small (PS)	19
Fire Fighting Vessels (FL)	5
Patrol Craft:	
Patrol Craft (PC)	57
Patrol Craft (CL)	168
Fire Fighting Craft (FM)	10
Special Service Craft:	
Monitoring Craft (MS)	3
Surveillance Craft (SS)	33
Oil Recovery Craft (OR)	5
Oil Skimming Craft (OS)	3
Oil Boom Craft (OX)	19
Miscellaneous Craft (NO)	4
HYDROGRAPHIC SERVICE	
Surveying Vessels:	
Large (HL)	3
Medium (HM)	3
Small (HS)	16

Type	Active
NAVIGATION AIDS SERVICE	
Navigation Aids Research Vessel (LL)	1
Buoy Tenders:	
Large (LL)	3
Medium (LM)	1
Navigation Aids Tenders:	
Medium (LM)	11
Small (LS)	71
AIRCRAFT	
Fixed Wing:	
NAMC YS-11A	5
Short Skyvan	2
Beechcraft 200T	11
Cessna U206G	1
Helicopters:	
Mit-Sikorsky S 62A	1
Bell 212	17
Bell 206B	4
Kaw-Bell 47G3B-KH4	6
Kaw-Hughes 369HS	2

DELETIONS

1976: *Sagami, Yoshino, Noshiro, Kiso, Nagara, Tone* (small patrol vessels)
Yaegumo (patrol craft)
CS 105, 117 (harbour patrol craft), FS 03 (salvage craft), M 601, 611, 616, 801, 802

1977: *Mogami, Wakakusa, Shinano, Chikugo, Kumano, Kitakami, Asagumo* and *Shinkai*.
PC 34 and 35, CL 301 and 303, FS 07, M 618 and 902

1978: *Soya* (PL 107), *Genkai, Hanayuki, Mineyuki,* all CS 100 series, *Minoo, Sokai, Asagumo, Matsugumo,* numerous navigation tenders.

1979: 5 "Chifuri" class, 13 "Rebun" class (medium patrol vessels)
Akagi (small patrol vessel), *Matsuyuki, Isoyuki* and 26 "15 metre" type (coastal patrol craft), *Kaia, Ginga, Hokuto* (buoy tenders).

1980: *Teshio* PM 53, *Tatsuta* PM 52, *Tokachi* PM 51, *Shimayuki* PC 41, *Tamayuki* PC 42, *Hamayuki* PC 43, *Fukae* HS 20, HS 17.

GUARD AND RESCUE SERVICE

LARGE PATROL VESSELS

4 + 1 "SOYA" CLASS

Name	*No.*	*Builders*	*Commissioned*
SOYA	PL 01	Nippon Kokan, Tsurumi	22 Nov 1978
TSUGARU	PL 02	IHI, Tokyo	Apr 1979
OHSUMI	PL 03	Mitsui Tamano	Oct 1979
URAGA	PL 04	Hitachi Maizuru	Mar 1980
—	PL 05	Mitsubishi, Nagasaki	Aug 1982

Displacement, tons: 3 750 normal *(Soya)*; 3 700 (others)
Dimensions, feet (metres): 323·4 × 51·2 × 17·1 *(98·6 × 15·6 × 5·2) (Soya)*;
345·7 × 47·9 × 16·1 *(105·4 × 14·6 × 4·9)* (others)
Aircraft: 1 Bell 212 helicopter with hangar
Guns: 1—35 mm; 1—20 mm
Main engines: 2 SEMT-Pielstick diesels; 15 600 bhp; 2 shafts
Speed, knots: 20 *(Soya)*; 22·6 (others)
Range, miles: 5 500 at 18 knots
Endurance: 25 days
Complement: 71

Soya (replacement for the previous ship of the same name) ordered under the FY 1977 programme laid down 12 September 1977 and launched 3 July 1978. *Soya* has an icebreaking capability while the other ships are ice strengthened. *Tsugaru* launched 6 December 1978, *Ohsumi* 1 June 1979, *Uraga* October 1979, PL 05 laid down 23 October 1980 for completion August 1982.

Radar: Two navigation sets.
One helicopter control set.

Stabiliser: From *Tsugaru* on this class is fitted with both fin stabilisers and anti-rolling tanks of 70 tons capacity. The fixed electric hydraulic fins have a lift of 26 tons × 2 at 18 knots which reduces rolling by 90 per cent at that speed. At slow speed the reduction is 50 per cent, using the tanks.

OHSUMI *10/1980, Ships of the World*

2 "IZU" CLASS

Name	*No.*	*Builders*	*Commissioned*
IZU	PL 31	Hitachi Mukai Shima	July 1967
MIURA	PL 32	Maizuru	Mar 1969

Displacement, tons: 2 081 normal
Dimensions, feet (metres): 313·3 × 38 × 12·8 *(95·6 × 11·6 × 3·9)*
Gun: 1—40 mm
Main engines: 2 diesels; 2 shafts; 10 400 bhp = 21·6 knots
Range, miles: 14 500 at 12·7 knots; 5 000 at 21 knots
Complement: 72

Izu was laid down in August 1966, launched in January 1967. *Miura* was laid down in May 1968, launched in October 1968. Employed in long range rescue and patrol duties. Equipped with various types of marine instruments. Ice strengthened hull.

Radar: One navigation set.

Station: Yokohama.

IZU *1978, Maritime Safety Agency*

26 + 2 "SHIRETOKO" CLASS

Name	*No.*	*Builders*	*Commissioned*
SHIRETOKO	PL 101	Mitsui Tamano	8 Nov 1978
ESAN	PL 102	Sumitomo	16 Nov 1978
WAKASA	PL 103	Kawaju Kobe	29 Nov 1978
YAHIKO	PL 104	Mitsubishi Shimonoseki	16 Nov 1978
MOTOBU	PL 105	Sasebo	29 Nov 1978
RISHIRI	PL 106	Shikoku	Sep 1979
MATSUSHIMA	PL 107	Tohoku	Sep 1979
IWAKI	PL 108	Naikai	Aug 1979
SHIKINE	PL 109	Usuki	Sep 1979
SURUGA	PL 110	Kurushima	Sep 1979
REBUN	PL 111	Narazaki	Nov 1979
TYOKAI	PL 112	Nihonkai	Nov 1979
ASHIZURI	PL 113	Sanoyasu	Oct 1979
OKI	PL 114	Tsuneishi	Nov 1979
NOTO	PL 115	Miho	Nov 1979
YONAKUNI	PL 116	Hayashikane	Oct 1979
DAISETSU	PL 117	Hakodate	Mar 1980
SHIMOKITA	PL 118	Kakoki	Mar 1980
SUZUKA	PL 119	Kanazashi	Mar 1980
KUNISAKI	PL 120	Kouyo	Feb 1980
GENKAI	PL 121	Oshima	Jan 1980
GOTOU	PL 122	Onomichi	Feb 1980
KOSHIKI	PL 123	Kasado	Jan 1980
HATERUMA	PL 124	Osaka	Mar 1980
KATORI	PL 125	Tohoku	Oct 1980
KUNIGAMI	PL 126	Kanda	Oct 1980
—	PL 127	Uzumi	Mar 1982
—	PL 128	Shikoku	Mar 1982

Displacement, tons: 1 290 normal
Dimensions, feet (metres): 255·8 × 31·5 × 10·5 *(78 × 9·6 × 3·2)*
Guns: 1—40 mm or 1—35 mm (PL 124 onwards); 1—20 mm
Main engines: 2 diesels; 7 000 bhp; 2 shafts
Speed, knots: 20
Range, miles: 5 200 at 16 knots
Endurance: 25 days
Complement: 41

Average time from launch to commissioning has been about four to five months. PL 127 and 128 laid down November 1980.

SHIRETOKO *1979, Maritime Safety Agency*

4 "ERIMO" and "DAIO" CLASSES

Name	*No.*	*Builders*	*Commissioned*
ERIMO	PL 13	Hitachi	30 Nov 1965
SATSUMA	PL 14	Hitachi	30 July 1966
DAIO	PL 15	Hitachi Maizuru	28 Sep 1973
MUROTO	PL 16	Naikai	30 Nov 1974

Displacement, tons: 1 009 normal (1 194 *Daio* and *Muroto*)
Dimensions, feet (metres): 251·3 × 30·2 × 9·9 *(76·6 × 9·2 × 3)*
(Daio and Muroto; 251·3 × 31·5 × 10·7 *(76·6 × 9·6 × 3·3))*
Guns: 1—3 in/50; 1—20 mm (1—40 mm; 1—20 mm *Daio* and *Muroto*)
Main engines: Diesels; 2 shafts; 4 800 bhp = 19·78 knots
(7 000 bhp; cp propellers = 20 knots, *Daio* and *Muroto*)
Range, miles: 5 000 at 17 knots
Complement: 72

Erimo was laid down on 29 March 1965 and launched on 14 August 1965. Her structure is strengthened against ice. Employed as a patrol vessel off northern Japan. *Satsuma* is assigned to guard and rescue south of Japan. *Daio* was laid down 18 October 1972 and launched 19 June 1973. *Muroto* was laid down 15 March 1974 and launched 5 August 1974.

Stations: PL 13—Kushiro; 14—Kagoshima; 15—Kushiro; 16—Kagoshima.

Radar: One navigation set.

SATSUMA *5/1977, Yoshifumi Mayama*

1 "KOJIMA" CLASS

Name	*No.*	*Builders*	*Commissioned*
KOJIMA	PL 21	Kure	21 May 1964

Displacement, tons: 1 201
Dimensions, feet (metres): 228·3 × 33·8 × 10·5 *(69·6 × 10·3 × 3·2)*
Guns: 1—3-in/50 *(76 mm)*; 1—40 mm; 1—20 mm
Main engines: Diesels; 2 600 hp = 17 knots
Range, miles: 6 000 at 13 knots
Complement: 17 officers, 42 men, 47 cadets

Maritime Safety Academy training ship.

Radar: Two navigation sets.

KOJIMA *5/1977, Yoshifumi Mayama*

2 "NOJIMA" CLASS

Name	*No.*	*Builders*	*Commissioned*
NOJIMA	PL 11	Uraga	30 Apr 1962
OJIKA	PL 12	Uraga	10 June 1963

Displacement, tons: 950 standard; 1 009 normal; 1 113 full load
Dimensions, feet (metres): 226·5 × 30·2 × 10·5 *(69·1 × 9·2 × 3·2)*
Main engines: 2 diesels; 3 000 bhp = 17·5 knots
Range, miles: 9 270 at 17 knots
Complement: 51

Nojima laid down on 27 October 1961, launched on 12 February 1962. Both employed as patrol vessels and weather ships.

Radar: One navigation set.

Stations: PL 11—Yokohama; 12—Shiogama.

OJIKA *2/1977, Yoshifumi Mayama*

MEDIUM PATROL VESSELS

6 "TESHIO" CLASS

Name	*No.*	*Builders*	*Commissioned*
TESHIO	PM 01	Shikoku	30 Sep 1980
OIRASE	PM 02	Naikai	29 Aug 1980
ECHIZEN	PM 03	Usuki	30 Sep 1980
TOKACHI	PM 04	Narazaki	Mar 1981
HITACHI	PM 05	Tohoka	Mar 1981
OKITSU	PM 06	Usuki	Mar 1981

Displacement, tons: 540 standard; 670 full load
Dimensions, feet (metres): 222·4 × 25·9 × 6·6 *(67·8 × 7·9 × 2·7)*
Main engines: 2 diesels; 2 shafts; 3 000 bhp = 18 knots
Range, miles: 3 500 at 16 knots
Complement: 33

First three built under FY 1979 programme and second three under FY 1980 programme.

Radar: Two navigation sets.

OIRASE *8/1980, Ships of the World*

20 "BIHORO" CLASS

Name	*No.*	*Builders*	*Commissioned*
BIHORO	PM 73	Tohoku	28 Feb 1974
KUMA	PM 74	Usuki	28 Feb 1974
FUJI	PM 75	Usuki	7 Feb 1975
KABASHIMA	PM 76	Usuki	25 Mar 1975
SADO	PM 77	Tohoku	1 Feb 1975
ISHIKARI	PM 78	Tohoku	13 Mar 1976
ABUKUMA	PM 79	Tohoku	30 Jan 1976
ISUZU	PM 80	Naikai	10 Mar 1976
KIKUCHI	PM 81	Usuki	6 Feb 1976
KUZURYU	PM 82	Usuki	18 Mar 1976
HOROBETSU	PM 83	Tohoku	27 Jan 1977
SHIRAKAMI	PM 84	Tohoku	24 Mar 1977
SAGAMI	PM 85	Naikai	30 Nov 1976
TONE	PM 86	Usuki	30 Nov 1976
YOSHINO	PM 87	Usuki	28 Jan 1977
KUROBE	PM 88	Shikoku	15 Feb 1977
CHIKUGO	PM 90	Naikai	27 Jan 1978
YAMAKUNI	PM 91	Usuki	26 Jan 1978
KATSURA	PM 92	Shikoku	15 Feb 1978
SHINANO	PM 93	Tohoku	23 Feb 1978

Displacement, tons: 636 normal
Dimensions, feet (metres): 208 × 25·6 × 8·3 *(63·4 × 7·8 × 2·5)*
Gun: 1—20 mm
Main engines: 2 diesels; 2 shafts; 3 000 hp = 18 knots
Range, miles: 3 200 at 18 knots
Complement: 34

Average time from launch to commissioning, four months.

Radar: Two navigation sets.

KIKUCHI *5/1976, Yoshifuma Mayama*

2 "TAKATORI" CLASS

Name	*No.*	*Builders*	*Commissioned*
TAKATORI	PM 89	Naikai	24 Mar 1978
KUMANO	PM 94	Namura	23 Feb 1979

Displacement, tons: 634 normal
Dimensions, feet (metres): 149·9 × 30·2 × 9·3 *(45·7 × 9·2 × 2·9)*
Main engines: 2 diesels; 3 000 bhp; 2 shafts
Speed, knots: 15·7
Range, miles: 750 miles at 15 knots
Complement: 29

Average time from launch to commissioning, four months.

TAKATORI *1978, Maritime Safety Agency*

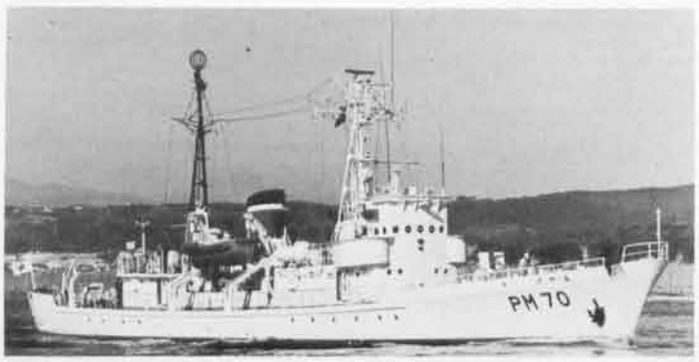
7 "KUNASHIRI" CLASS

Name	*No.*	*Builders*	*Commissioned*
KUNASHIRI	PM 65	Maizuru	28 Mar 1969
MINABE	PM 66	Maizuru	28 Mar 1970
SAROBETSU	PM 67	Maizuru	30 Mar 1971
KAMISHIMA	PM 68	Usuki	31 Jan 1972
MIYAKE	PM 70	Tohoku	25 Jan 1973
AWAJI	PM 71	Usuki	25 Jan 1973
YAEYAMA	PM 72	Usuki	20 Dec 1972

Displacement, tons: 498 normal
Dimensions, feet (metres): 190·4 × 24·2 × 7·9 *(58·1 × 7·4 × 2·4)*
Gun: 1—20 mm
Main engines: 2 diesels; 2 600 bhp = 17·6 knots
Range, miles: 3 000 at 16·9 knots
Complement: 40

Kunashiri was laid down in October 1968 and launched in December 1968. *Minabe* was laid down in October 1969.

Radar: One navigation set.



MIYAKE *10/1974, Yoshifumi Mayama*

OKINAWA *5/1976, Yoshifumi Mayama*

5 "MATSUURA" CLASS

Name	*No.*	*Builders*	*Commissioned*
MATSUURA	PM 60	Osaka	18 Mar 1961
SENDAI	PM 61	Osaka	14 Apr 1962
AMAMI	PM 62	Hitachi	29 Mar 1965
NATORI	PM 63	Hitachi	20 Jan 1966
KARATSU	PM 64	Hitachi	21 Mar 1967

Displacement, tons: 425 normal
Dimensions, feet (metres): 181·5 × 23 × 7·5 *(55·4 × 7 × 2·3)*
Gun: 1—20 mm
Main engines: 2 diesels; 1 400 bhp = 16·5 knots *(Matsuura, Sendai)*; 1 800 bhp = 16·8 knots *(Amami, Natori)*; 2 600 bhp *(Karatsu)* = 17 knots
Range, miles: 3 500 at 12 knots
Complement: 37

Matsuura was laid down on 16 October 1960, launched on 24 December 1960. *Sendai* was laid down on 23 August 1961, launched on 18 January 1962.

Radar: One navigation set.

NATORI *12/1974, Yoshifumi Mayama*

7 "YAHAGI" CLASS

Name	*No.*	*Builders*	*Commissioned*
YAHAGI	PM 54	Niigata	31 July 1956
SUMIDA	PM 55	Niigata	30 June 1957
CHITOSE	PM 56	Niigata	30 Apr 1958
SORACHI	PM 57	Niigata	1 Mar 1959
YUBARI	PM 58	Niigata	15 Mar 1960
HORONAI	PM 59	Niigata	4 Feb 1961
OKINAWA	PM 69	Usuki	1 Oct 1970

Displacement, tons: 375·7 normal
Dimensions, feet (metres): 164·9 × 24 × 7·4 *(50·3 × 7·3 × 2·3)*
Gun: 1—20 mm
Main engines: 2 diesels; 1 400 bhp = 15·5 knots
Range, miles: 3 500 at 12 knots
Complement: 37

Yahagi was laid down on 9 December 1955, launched on 19 May 1956. *Chitose* was laid down on 20 September 1957, launched on 24 February 1958.
Okinawa transferred to MSA in 1972.

Radar: One navigation set.

SMALL PATROL VESSELS

1 "AKAGI" CLASS

Name	*No.*	*Builders*	*Commissioned*
AKAGI	PS 01	Sumidagawa	26 Mar 1980

Displacement, tons: 123 standard; 189 full load
Dimensions, feet (metres): 114·8 × 20·7 × 4·3 *(35 × 6·3 × 1·3)*
Gun: 1—13 mm
Main engines: 2 diesels; 2 shafts; 4 800 bhp = 26·5 knots
Range, miles: 500 at 20 knots
Complement: 12

Radar: One navigation set.

AKAGI *1979*

14 "HIDAKA" CLASS

Name	*No.*	*Builders*	*Commissioned*
HIDAKA	PS 32	Azuma	23 Apr 1962
HIYAMA	PS 33	Hitachi	13 Mar 1963
TSURUGI	PS 34	Mukaijima	13 Mar 1963
ROKKO	PS 35	Shikoku	31 Jan 1964
TAKANAWA	PS 36	Hayashikane	27 Jan 1964
AKIYOSHI	PS 37	Hashihama	29 Feb 1964
KUNIMI	PS 38	Hayashikane	15 Feb 1965
TAKATSUKI	PS 39	Kurashima	30 Mar 1965
KAMUI	PS 41	Hayashikane	15 Feb 1966
ASHITAKA	PS 43	Usuki	10 Feb 1967
KURAMA	PS 44	Usuki	28 Feb 1967
IBUKI	PS 45	Usuki	5 Mar 1968
TOUMI	PS 46	Usuki	20 Feb 1968
NOBARU	PS 49	Mukaijima	10 Dec 1968

Displacement, tons: 166·2 to 164·4 standard; 169·4 normal
Dimensions, feet (metres): 111 × 20·8 × 5·5 *(33·8 × 6·3 × 1·7)*
Main engine: 1 diesel; 1 shaft; 690 to 700 bhp = 13·5 knots
Range, miles: 1 200 at 12 knots
Complement: 17

Hidaka was laid down on 4 October 1961, launched on 2 March 1962. *Kunimi* was built under the 1964 programme, laid down on 15 November 1964, launched on 19 December 1964.

Radar: One navigation set.

ASHITAKA *1975, Maritime Safety Agency*

1 "TSUKUBA" CLASS

Name	*No.*	*Builders*	*Commissioned*
TSUKUBA	PS 31	Kanagawa	30 Mar 1962

Displacement, tons: 63 normal
Dimensions, feet (metres): 80·5 × 21·5 × 3·7 *(24·6 × 6·6 × 1·1)*
Main engines: 2 Niigata diesels; 1 800 bhp = 18 knots
Range, miles: 230 at 15 knots
Complement: 19

Radar: One navigation set.

TSUKUBA *1974, Maritime Safety Agency*

3 "BIZAN" CLASS

Name	*No.*	*Builders*	*Commissioned*
BIZAN	PS 42	Shimonoseki	28 Mar 1966
ASAMA	PS 47	Shimonoseki	31 Jan 1969
SHIRAMINE	PS 48	Shimonoseki	15 Dec 1969

Displacement, tons: 40 normal; *Shiramine* 48 normal
Dimensions, feet (metres): 85·3 × 18·3 × 2·8 *(26 × 5·6 × 0·9)*
Gun: 1 MG aft
Main engines: 2 Mitsubishi diesels; 1 140 bhp = 21·6 knots.
Shiramine, 2 Benz (MTU) diesels; 2 200 bhp = 25 knots
Range, miles: 400 at 18 knots; *Shiramine* 250 at 25 knots
Complement: 14

Of light metal construction.

Radar: One navigation set.

BIZAN *1974, Maritime Safety Agency*

COASTAL PATROL CRAFT

19 "MURAKUMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
MURAKUMO	PC 201	Mitsubishi, Shimonoseki	24 Mar 1978
KITAGUMO	PC 202	Hitachi, Kanagawa	17 Mar 1978
YUKIGUMO	PC 203	Hitachi, Kanagawa	27 Sep 1978
ASAGUMO	PC 204	Mitsubishi, Shimonoseki	21 Sep 1978
HAYAGUMO	PC 205	Mitsubishi, Shimonoseki	30 Jan 1979
AKIGUMO	PC 206	Hitachi, Kanagawa	28 Feb 1979
YAEGUMO	PC 207	Mitsubishi, Shimonoseki	16 Mar 1979
NATSUGUMO	PC 208	Hitachi, Kanagawa	22 Mar 1979
YAMAGIRI	PC 209	Hitachi, Kanagawa	29 June 1979
KAWAGIRI	PC 210	Hitachi, Kanagawa	27 July 1979
TERUZUKI	PC 211	Mitsubishi, Shimonoseki	26 June 1979
NATSUZUKI	PC 212	Mitsubishi, Shimonoseki	26 July 1979
MIYAZUKI	PC 213	Hitachi, Kanagawa	13 Mar 1980
NIZIGUMO	PC 214	Mitsubishi, Shimonoseki	Jan 1981
TATSUGUMO	PC 215	Mitsubishi, Shimonoseki	Mar 1981
HAMAYUKI	PC 216	Hitachi, Kanagawa	Feb 1981
ISONAMI	PC 217	Mitsubishi, Shimonoseki	Mar 1981
NAGOZUKI	PC 218	Hitachi, Kanagawa	Mar 1981
YAEZUKI	PC 219	Hitachi, Kanagawa	Mar 1981

Displacement, tons: 88
Dimensions, feet (metres): 101·7 × 20·7 × 10·8 *(31 × 6·3 × 3·3)*
Gun: 1—13 mm
Main engines: 2 MTU 16V-652-TB71 diesels; 2 shafts; 4 400 bhp
Speed, knots: 32
Range, miles: 350 at 28 knots
Complement: 10

MURAKUMO *1978, Maritime Safety Agency*

11 "AKIZUKI" CLASS

Name	*No.*	*Builders*	*Commissioned*
AKIZUKI	PC 64	Mitsubishi, Shimonoseki	28 Feb 1974
SHINONOME	PC 65	Mitsubishi, Shimonoseki	25 Feb 1974
URAYUKI	PC 72	Mitsubishi, Shimonoseki	31 May 1975
ISEYUKI	PC 73	Mitsubishi, Shimonoseki	31 July 1975
MAKIGUMO	PC 75	Mitsubishi, Shimonoseki	19 Mar 1976
HATAGUMO	PC 76	Mitsubishi, Shimonoseki	21 Feb 1976
HAMAZUKI	PC 77	Mitsubishi, Shimonoseki	29 Nov 1976
ISOZUKI	PC 78	Mitsubishi, Shimonoseki	18 Mar 1977
SHIMANAMI	PC 79	Mitsubishi, Shimonoseki	23 Dec 1977
YUZUKI	PC 80	Mitsubishi, Shimonoseki	22 Mar 1979
HANAYUKI	PC 81	Mitsubishi, Shimonoseki	Mar 1981

Displacement, tons: 74 normal; 124 full load
Dimensions, feet (metres): 83·5 × 20·7 × 9·8 *(26 × 6·3 × 3)*
Main engines: 3 Mitsubishi 12DM20MTK diesels; 3 000 bhp = 22·1 knots
Range, miles: 220 at 22 knots
Complement: 10

Shimanami laid down 29 June 1977.

Radar: One navigation set.

MAKIGUMO *5/1977, Yoshifumi Mayama*

17 "SHIKINAMI" CLASS

Name	*No.*	*Builders*	*Commissioned*
SHIKINAMI	PC 54	Mitsubishi, Shimonoseki	25 Feb 1971
TOMONAMI	PC 55	Mitsubishi, Shimonoseki	30 Mar 1971
WAKANAMI	PC 56	Mitsubishi, Shimonoseki	30 Oct 1971
ISENAMI	PC 57	Hitachi, Kanagawa	29 Feb 1972
TAKANAMI	PC 58	Mitsubishi, Shimonoseki	30 Nov 1971
MUTSUKI	PC 59	Hitachi, Kanagawa	18 Dec 1972
MOCHIZUKI	PC 60	Hitachi, Kanagawa	18 Dec 1972
HARUZUKI	PC 61	Mitsubishi, Shimonoseki	30 Nov 1972
KIYOZUKI	PC 62	Mitsubishi, Shimonoseki	18 Dec 1972
URAZUKI	PC 63	Hitachi, Kanagawa	30 Jan 1973
URANAMI	PC 66	Hitachi, Kanagawa	22 Dec 1973
TAMANAMI	PC 67	Mitsubishi, Shimonoseki	25 Dec 1973
MINEGUMO	PC 68	Mitsubishi, Shimonoseki	30 Nov 1973
KIYONAMI	PC 69	Mitsubishi, Shimonoseki	30 Oct 1973
OKINAMI	PC 70	Hitachi, Kanagawa	8 Feb 1974
WAKAGUMO	PC 71	Hitachi, Kanagawa	25 Mar 1974
ASOYUKI	PC 74	Hitachi, Kanagawa	16 June 1975

Displacement, tons: 44 normal
Dimensions, feet (metres): 69 × 17·4 × 3·2 *(21 × 5·3 × 1)*
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 200 bhp = 26·5 knots
Range, miles: 280 miles at near maximum speed
Complement: 10

Built completely of light alloy.

Radar: One navigation set.

KIYONAMI *1973, Maritime Safety Agency*

10 "YAMAYUKI" CLASS

Name	No.	Builders	Commissioned
YAMAYUKI	PC 44	Hitachi, Kanagawa	15 Mar 1967
KOMAYUKI	PC 45	Hitachi, Kanagawa	15 Mar 1967
UMIGIRI	PC 46	Hitachi, Kanagawa	15 Mar 1968
ASAGIRI	PC 47	Hitachi, Kanagawa	15 Mar 1968
HAMAGIRI	PC 48	Sumidagawa	19 Mar 1970
SAGIRI	PC 49	Hitachi, Kanagawa	31 Mar 1970
SETOGIRI	PC 50	Hitachi, Kanagawa	5 Mar 1970
HAYAGIRI	PC 51	Hitachi, Kanagawa	5 Mar 1970
HAMANAMI	PC 52	Sumidagawa	22 Mar 1971
MATSUNAMI	PC 53	Hitachi, Kanagawa	30 Mar 1971

Displacement, tons: 38 normal
Dimensions, feet (metres): 69 × 16·6 × 3·2 *(21 × 5·1 × 1)* (see *Class* note)
Gun: 1—13 mm
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 200 bhp = 26·3 knots;
PC 48 1 140 bhp = 14·6 knots; PC 52 = 21·8 knots; PC 53 = 20·8 knots
Range, miles: About 300 miles at near maximum speed
Complement: 10

Class: PCs 44-47 and 49-51 were built of light alloy frames with wooden hulls. PC 48 and 52 were built of steel. PC 53 was built completely of light alloy and is sometimes classified as a separate class having the larger dimensions of 82 × 19·6 × 9 ft *(25 × 6 × 2·8 m)*.

Radar: One navigation set.

"YAMAYUKI" Class *1975, Maritime Safety Agency*

168 COASTAL PATROL AND RESCUE CRAFT

CL 32-156, 201-238, 315-319

Displacement, tons: 27·3 full load
Dimensions, feet (metres): 59 × 14·1 × 4·3 *(18 × 4·3 × 1·3)*
Main engines: 2 diesels; 2 shafts; 900 bhp = 20 knots
Range, miles: 180 at 19 knots
Complement: 6

Data above for "Yamayuri" class.
For coastal patrol and rescue duties. Built of high tensile steel.

Classes: This total includes six similar classes of different characteristics—"Yakaze", "Chiyokaze", "Nogekaze", "Yamayuri", "Hamakaze", "Asashimo".

Radar: One navigation set.

CL 201—YAMAYURI *1978, Maritime Safety Agency*

FIRE FIGHTING VESSELS AND CRAFT

5 "HIRYU" CLASS

Name	No.	Builders	Commissioned
HIRYU	FL 01	Asano Dockyard	4 Mar 1969
SHORYU	FL 02	Asano Dockyard	4 Mar 1970
NANRYU	FL 03	Asano Dockyard	4 Mar 1971
KAIRYU	FL 04	Asano Dockyard	18 Mar 1977
SUIRYU	FL 05	Asano Dockyard	24 Mar 1978

Displacement, tons: 251 normal
Dimensions, feet (metres): 90·2 × 34·1 × 7·2 *(27·5 × 10·4 × 2·2)*
Main engines: 2 sets diesels; 2 200 bhp = 13·5 knots
Range, miles: 395 at 13·4 knots
Complement: 14

Hiryu, a catamaran type fire boat, was laid down in October 1968, launched 21 January 1969. Designed and built for fire fighting services to large tankers. *Shoryu* was launched on 18 January 1970, *Nanryu* on 16 January 1971, and *Kairyu* on 18 January 1977. *Suiryu* was ordered 7 June 1976.

Radar: One navigation set.

HIRYU *5/1976, Yoshifumi Mayama*

10 "NUNOBIKI" CLASS

Name	No.	Builders	Commissioned
NUNOBIKI	FM 01	Yokohama Yacht Co Ltd	25 Feb 1974
YODO	FM 02	Yokohama Yacht Co Ltd	30 Mar 1975
OTOWA	FM 03	Sumidagawa	25 Dec 1974
SHIRAITO	FM 04	Yokohama Yacht Co Ltd	25 Feb 1975
KOTOBIKI	FM 05	Yokohama Yacht Co Ltd	31 Jan 1976
NACHI	FM 06	Sumidagawa	14 Feb 1976
KEGON	FM 07	Yokohama Yacht Co Ltd	29 Jan 1977
MINOO	FM 08	Sumidagawa	27 Jan 1978
RYUSEI	FM 09	Yokohama Yacht Co Ltd	Mar 1980
KIYOTAKI	FM 10	Sumidagawa	Mar 1981

Displacement, tons: 87
Dimensions, feet (metres): 75·4 × 19·7 × 10·5 *(23 × 6 × 3·2)*
Main engines: 1 Mercedes-Benz (MTU) diesel plus 2 Nissan diesels;
1 100 bhp + 500 bhp = 14 knots
Range, miles: 1 800 at 14 knots
Complement: 12

Radar: One navigation set.

HYDROGRAPHIC SERVICE

Name	No.	Builders	Commissioned
SHOYO	HL 01	Hitachi, Maizuru	26 Feb 1972

Displacement, tons: 2 044 normal
Dimensions, feet (metres): 262·4 × 40·3 × 13·8 *(80 × 12·3 × 4·2)*
Main engines: 2 Fuji V-12 diesels; 4 800 hp; 1 shaft = 17·4 knots
Range, miles: 8 340 at 16 knots
Complement: 44

Launched 18 September 1971. Fully equipped for all types of hydrographic and oceanographic work. Based at Tokyo.

Radar: Two navigation sets.

SHOYO *1973, Maritime Safety Agency*

Name	No.	Builders	Commissioned
TAKUYO	HL 02	Niigata	12 Mar 1957

Displacement, tons: 853 normal
Dimensions, feet (metres): 204·7 × 31·2 × 10·7 *(62·4 × 9·5 × 3·3)*
Main engines: 2 diesels; 1 300 bhp = 14 knots
Range, miles: 8 000 at 12 knots
Complement: 36

Laid down on 19 May 1956, launched on 19 December 1956. Based at Tokyo. To be replaced by new 3 000 tons ship laid down in 1980.

Radar: One navigation set.

TAKUYO *1975, Maritime Safety Agency*

Name	*No.*	*Builders*	*Commissioned*
MEIYO	HL 03	Nagoya	15 Mar 1963

Displacement, tons: 486 normal
Measurement, tons: 360 gross
Dimensions, feet (metres): 146 × 26·5 × 9·5 *(44·5 × 8·1 × 2·9)*
Main engine: 1 diesel; 700 bhp = 12 knots
Range, miles: 5 000 at 11 knots
Complement: 25

Laid down on 14 September 1962, launched 22 December 1962. Cp propeller. Based at Tokyo.

Radar: One navigation set.

MEIYO *1975, Maritime Safety Agency*

Name	*No.*	*Builders*	*Commissioned*
KAIYO	HM 06	Nagoya	14 Mar 1964

Displacement, tons: 378 normal
Dimensions, feet (metres): 146 × 26·5 × 7·8 *(44·5 × 8·1 × 2·4)*
Main engine: 1 diesel; 450 bhp = 12 knots
Range, miles: 6 100 at 11 knots
Complement: 23

Cp propeller.

Radar: One navigation set.

KAIYO *2/1976, Yoshifumi Mayama*

Name	*No.*	*Builders*	*Commissioned*
TENYO	HM 05	Yokohama Yacht Co	30 Mar 1961

Displacement, tons: 171 normal
Dimensions, feet (metres): 99·1 × 19·2 × 9·2 *(30·2 × 5·9 × 2·8)*
Main engines: Diesels; 230 bhp = 10 knots
Range, miles: 3 160 at 10 knots
Complement: 16

Radar: One navigation set.

TENYO *1975, Maritime Safety Agency*

Name	*No.*	*Builders*	*Commissioned*
HEIYO	HM 04	Shimuzu Dockyard	22 Mar 1955

Displacement, tons: 77 normal
Dimensions, feet (metres): 76·5 × 14·5 × 8 *(23·3 × 4·4 × 2·4)*
Main engine: 1 diesel; 150 bhp = 9 knots
Range, miles: 670 at 9 knots
Complement: 9

Radar: One navigation set.

HEIYO *1975, Maritime Safety Agency*

SURVEYING CRAFT

11 "HAMASHIO" CLASS

HS 01-11

Completed 1969-72. Of 10 metres.

1 "FUKAE" CLASS

HS 21

Completed 1951. Of 12 metres.

5 "AKASHI" CLASS

HS 31-35

Completed 1973-75. Of 15 metres.

NAVIGATION AIDS SERVICE

Name	*No.*	*Builders*	*Commissioned*
TSUSHIMA	LL 01	Mitsui, Tamano	9 Sep 1977

Displacement, tons: 1 834 normal
Dimensions, feet (metres): 246 × 41 × 13·8 *(75 × 12·5 × 4·2)*
Main engine: 1 diesel; 4 000 shp; 1 shaft = 15·5 knots
Range, miles: 10 000 at 15 knots
Endurance: 30 days
Complement: 54

Built under FY 1975 programme. Laid down 10 June 1976, launched 7 April 1977. Replacement for *Wakakusa* as Lighthouse Supply Ship, taking her pennant number. Fitted with bow thruster and tank stabilisers. Equipped with modern electronic instruments for carrying out research on electronic aids to navigation.

Armament: Can ship one 76 mm and two 40 mm.

TSUSHIMA *1978, Maritime Safety Agency*

3 "HOKUTO" CLASS

Name	*No.*	*Builders*	*Commissioned*
HOKUTO	LL 11	Sasebo	29 June 1979
KAIOU	LL 12	Sasebo	11 Mar 1980
GINGA	LL 13	Kawaju, Kobe	18 Mar 1980

Displacement, tons: 800 normal
Dimensions, feet (metres): 180·4 × 34·8 × 8·7 *(55 × 10·6 × 2·7)*
Main engines: 2 diesels; 2 shafts; 2 600 bhp = 13 knots
Range, miles: 3 000 at 13 knots
Complement: 31

HOKUTO *1979, Maritime Safety Agency*

Name	*No.*	*Builders*	*Commissioned*
MYOJO	LM 11	Asano	25 Mar 1974

Displacement, tons: 303 normal
Dimensions, feet (metres): 88·6 × 39·4 × 8·8 *(27 × 12 × 2·7)*
Main engines: 2 diesels; 600 bhp = 11·1 knots
Range, miles: 1 360 at 10 knots
Complement: 49

Completed in March 1974 to replace an identical ship of the same name, completed in 1967, which was lost in collision April 1972. Catamaran type buoy tender, propelled by cp propellers, this ship is employed in maintenance and position adjustment service to floating aids to navigation.

MYOJO *5/1976, Yoshifumi Mayama*

NAVIGATION AIDS TENDERS

Note: There are 71 small navigation aids tenders (LS).

Name	*No.*	*Builders*	*Commissioned*
ZUIUN	LM 101	Nihonkai	Nov 1962
REIUN	LM 102	Kanto Kogyo	Nov 1971
SEKIUN	LM 105	Usuki	Mar 1970
HAKUUN	LM 106	Sumidagawa	Feb 1978
TOUN	LM 107	Sumidagawa	Mar 1959
REIMEI	LM 108	Shikoku	Mar 1966
SHOUN	LM 109	Usuki	Mar 1966
SEIUN	LM 110	Yokohama Yacht	Mar 1968
HOUN	LM 111	Usuki	Mar 1970
AYABANE	LM 112	Shimoda	Dec 1972
GENUN	LM 113	Izumi	Mar 1973

HAKUUN *1978, Maritime Safety Agency*

MISCELLANEOUS

MONITORING CRAFT

KINUGASA MS 01 **SAIKAI** MS 02 **KATUREN** MS 03

First two 10 metre catamaran craft, MS 03 of 16 metres.

SURVEILLANCE CRAFT

SS 01, 02, 04-34

Craft of 6 metre completed between 1972-79. SS 15 is equipped with water-jet.

OIL SKIMMERS

OS 01-03

Completed 1974-75 by Lockheed.

OIL BOOM CRAFT

M 101-119

Dumb barges of 20 metre completed 1974-76.

UTILITY CRAFT

M 603, 615, 618, 804

Of varying sizes about 6 metres. M 803 renamed *Wakaba* operates for MSA Academy at Kure.

OIL RECOVERY CRAFT

SHIRASAGI OR 01, — OR 02, — OR 03, — OR 04, — OR 05

Displacement, tons: 140
Dimensions, feet (metres): 72·3 × 21 × 2·8 *(22 × 6·4 × 0·8)*
Main engines: 2 diesels; 780 bhp = 10 knots
Complement: 6

Shirasagi completed 31 January 1977 by Sumidagawa.

SHIRASAGI *5/1977, Yoshifumi Mayama*

JIBUTI

Ministerial

Minister of Defence:
Habib Loita

Headquarters' Appointment

Chief of Staff:
Colonel Ali Meial Wais

Mercantile Marine

Lloyd's Register of Shipping
8 vessels of 3 135 tons gross

After the declaration of independence in 1977 the nucleus of a naval force was formed with the commissioning of one Tecimar 30 ton coastal patrol craft, capable of 25 knots and carrying two machine guns.

JORDAN

Ministerial

Minister of Defence:
Mudar Badran (Premier)

Diplomatic Representation

Defence Attaché in London:
Colonel Mahmoud Salem

Coastal Guard

It was officially stated in 1969 that Jordan had no naval force known as such, but the Jordan Coastal Guard, sometimes called the Jordan Sea Force, took orders directly from the Director of Operations at General Headquarters. There is no longer a flotilla in the Dead Sea.

Base

Aqaba

Personnel

(a) 1981: 300 officers and men
(b) Voluntary service

Mercantile Marine

Lloyd's Register of Shipping:
1 vessel of 496 tons gross

LIGHT FORCES

HUSSEIN ABDALLAH

Wooden hulled of 40 ft *(12 m)* acquired in August 1974.

1 BERTRAM TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 7
Dimensions, feet (metres): 30·4 × 10·8 × 1·6 *(9·2 × 3·3 × 0·5)*
Guns: 1—12·7 mm; 1—7·2 mm
Main engines: Diesels = 24 knots
Complement: 8

Glass fibre hull.

4 "25 ft" TYPE (COASTAL PATROL CRAFT)

Aluminium hulls.

4 PATROL CRAFT

Wooden hulled craft of about 18 ft *(5·4 m)*—unarmed.

KAMPUCHEA

The Marine Royale Khmer was established on 1 March 1954 and became Marine Nationale Khmer (MNK) on 9 October 1970. With the imminent victory of the forces of Khmer Rouge in April-May 1975, several ships (listed in Deletions section) escaped from Khmer waters. Originally Cambodia, became known as the Khmer Republic and is now officially called Democratic Kampuchea.

Note: The facts of this force are very uncertain. There is no postal link with Kampuchea now and what follows is probably "the worst possible case". It is probable that less than a third of the craft listed is operational, although the new links with Viet-Nam may have provided some much-needed spares. Nevertheless neither navy has much operational value.

Personnel

(a) 1975: 11 000 officers and men including Marine Corps (4 000 officers and men) (current situation not known)
(b) 18 months' national service

Mercantile Marine

Lloyd's Register of Shipping:
3 vessels of 3 558 tons gross

DELETIONS

Large Patrol Craft

1975 E 311 to Thailand (16 May), E 312 to Subic Bay, Philippines (2 May)
P111 and P112 to Subic Bay (17 April) and to Philippine Navy

Amphibious Forces

1979 2 "LCU 1466" class, 1 EDIC, 4 "LCU 501" class

Light Forces

1975 VR1 and VR2 (ex-Yugoslav "101" class) believed sunk by US aircraft during *Mayaguez* incident (13 May)
1979 8 "Swift" class, 40 PBR Mk I and II

LIGHT FORCES

9 Ex-US "SWIFT" CLASS (COASTAL PATROL CRAFT)

P 122 P 124 P 126-132

Displacement, tons: 22·5
Dimensions, feet (metres): 50 × 13 × 3·5 *(15 × 4 × 1·1)*
Guns: 1—81 mm mortar; 3—5 MGs
Main engines: 2 diesels; 960 hp; 2 shafts = 28 knots
Complement: 6

Transferred in 1972-73.

2 Ex-US AVR TYPE (COASTAL PATROL CRAFT)

VR 3 VR 4

Displacement, tons: 30
Dimensions, feet (metres): 63 × 13 × 4·6 *(19·1 × 4 × 1·4)*
Guns: 4—12·7 mm MGs
Main engines: General Motors diesel; 500 bhp = 15 knots
Complement: 12

25 Ex-US PBR MARK 1 and II (RIVER PATROL CRAFT)

UP 29-31, 33, 34 (Mark I)
UP 5, 8-10, 25, 26, 36, 37 +12

Displacement, tons: 8
Dimensions, feet (metres): 32 × 11 × 2·6 *(9·8 × 3·4 × 0·8)*
Guns: 3—5 MGs; 1 grenade launcher
Main engines: 2 geared diesels; water-jets = 25 knots
Complement: 5

Transferred 1973-74.

3 Ex-CHINESE "YULIN" CLASS (COASTAL PATROL CRAFT)

VP 1 VP 2 VP 3

Displacement, tons: 7·7 standard; 10 full load
Dimensions, feet (metres): 40 × 9·5 × 3·5 *(12·2 × 2·9 × 1·1)*
Guns: 2—14·5 mm; 2—12·7 mm
Main engine: 1 diesel; 300 bhp = 24 knots
Complement: 10

Transferred from the People's Republic of China in January 1968. Built in Shanghai.

1 Ex-HDML TYPE (COASTAL PATROL CRAFT)

VP 212 (ex-*VP 748, ex-HDML 1223*)

Displacement, tons: 46 standard; 54 full load
Dimensions, feet (metres): 72 × 16 × 5·5 *(22 × 4·9 × 1·7)*
Guns: 2—20 mm; 4—7·5 mm MGs
Main engines: 2 diesels; 2 shafts; 300 bhp = 10 knots
Complement: 8

Former British harbour defence motor launch of the HDML type. Transferred from the British Navy to the French Navy in 1950 and again transferred from the French Navy to the MNK in 1956.

MISCELLANEOUS

1 TUG

PINGOUIE R 911 (ex-US *YTL 556*)

2 FLOATING DOCKS

One of 350 tons from France in 1955.
One of 1 000 tons from the USA in 1972.

3 SURVEYING CRAFT

Craft of 14, 15 and 16 tons.

KENYA

Ministerial

Minister of Defence:
James Samuel Gichuru

Administration

Commander, Kenya Navy:
Colonel E. S. Mbilu

Diplomatic Representation

Defence Adviser in London:
Colonel R. S. O. Mabwa

Establishment

The Kenya Navy was inaugurated on 12 December 1964, the first anniversary of Kenya's independence.

General

With a coastline of only 350 miles the present force is probably adequate for coastal patrol duties. With a 200 mile limit to think about and with the three 31 metre craft probably well into the second half of their lives the possibility of some type of corvette replacement must be on the cards. Something of at least 500 tons would be necessary for offshore work, particularly in the NE Monsoon season.
The Mombasa dry dock with a capacity of 18 000 tons was opened in March 1978.

Personnel

(a) 1981: 350 officers and men
(b) Voluntary service

Prefix to Ships' Names

KNS

Base

Mombasa

Mercantile Marine

Lloyd's Register of Shipping:
19 vessels of 17 371 tons gross

LIGHT FORCES

3 BROOKE MARINE TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MADARAKA	P 3121	Brooke Marine, Lowestoft	16 June 1975
JAMHURI	P 3122	Brooke Marine, Lowestoft	16 June 1975
HARAMBEE	P 3123	Brooke Marine, Lowestoft	22 Aug 1975

Displacement, tons: 120 standard; 145 full load
Dimensions, feet (metres): 107 × 20 × 5·6 *(32·6 × 6·1 × 1·7)*
Missiles: See *Missiles* note
Guns: 2—40 mm
Main engines: 2 Paxman 16-cyl Valenta diesels; 5 400 bhp; 2 shafts = 25·5 knots
Range, miles: 2 500 at 12 knots
Complement: 21 (3 officers, 18 men)

Ordered 10 May 1973. *Madaraka* launched 28 January 1975, *Jamhuri* 14 March 1975, *Harambee* 2 May 1975.

Missiles: It is reported that these craft are to be fitted with Gabriel missiles.

HARAMBEE

7/1976, Michael D. J. Lennon

BROOKE MARINE TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MAMBA	P 3100	Brooke Marine, Lowestoft	7 Feb 1974

Displacement, tons: 125 standard; 160 full load
Dimensions, feet (metres): 123 × 22·5 × 5·2 *(37·5 × 6·9 × 1·6)*
Missiles: See *Missiles* note
Guns: 2—40 mm Bofors
Main engines: 2 Paxman 16-cyl Ventura diesels; 4 000 hp = 25 knots
Range, miles: 3 300 at 13 knots
Complement: 25 (3 officers, 22 men)

Laid down 17 February 1972.

Missiles: It is reported that *Mamba* is to be fitted with Gabriel missiles.

MAMBA

1974

3 VOSPER TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SIMBA	P 3110	Vosper Ltd, Portsmouth	23 May 1966
CHUI	P 3112	Vosper Ltd, Portsmouth	7 July 1966
NDOVU	P 3117	Vosper Ltd, Portsmouth	27 July 1966

Displacement, tons: 96 standard; 109 full load
Dimensions, feet (metres): 103 × 19·8 × 5·8 *(31·4 × 6 × 1·8)*
Guns: 2—40 mm Bofors
Main engines: 2 Paxman Ventura diesels; 2 800 bhp = 24 knots
Range, miles: 1 500 at 16 knots
Complement: 23 (3 officers and 20 ratings)

The first ships specially built for the Kenya Navy. Ordered on 28 October 1964. *Simba* was launched on 9 September 1965. All three left Portsmouth on 22 August 1966 and arrived at their base in Mombasa on 4 October 1966. Air-conditioned. Fitted with roll damping fins.

SIMBA *1973, Kenyan Navy*

KOREA, Democratic People's Republic (North)

Ministerial

Minister of People's Armed Forces:
O Chin-u

Administration

Commander of the Navy:
Rear-Admiral Yu Chang Kwon

Personnel

(a) 1981: 30 300 officers and men (40 000 reserves)
(b) 5 years' national service

Bases

Main: Wonsan (East), Nampo (West)
Minor: Ch'ongjin, Haeju, Najin (Naval Academy), Munchon, Pipa-got, Cha-ho, Mayang Do, Sagon-ni, Kimchaek, Kosong, Songjon Pando, Yoko Ri, Chodo, Kwangyang Ni.

Strength of the Fleet

Type	*Active*	*Building*
Submarines—Patrol	16	1
Frigates	4	—
Fast Attack Craft—Missile	18	—
Fast Attack Craft—Torpedo	175	2
Fast Attack Craft—Gun	147	4
Large Patrol Craft	28	—
Coastal Patrol Craft	30	—
Amphibious Craft	102	—
Trawlers etc.	105	—

Mercantile Marine

Lloyd's Register of Shipping:
34 vessels of 230 695 tons gross

SUBMARINES

Note: Up to five small submarines reported as built in North Korea since 1974. Length 131 ft *(40 m)* to 147·6 ft *(45 m)*.

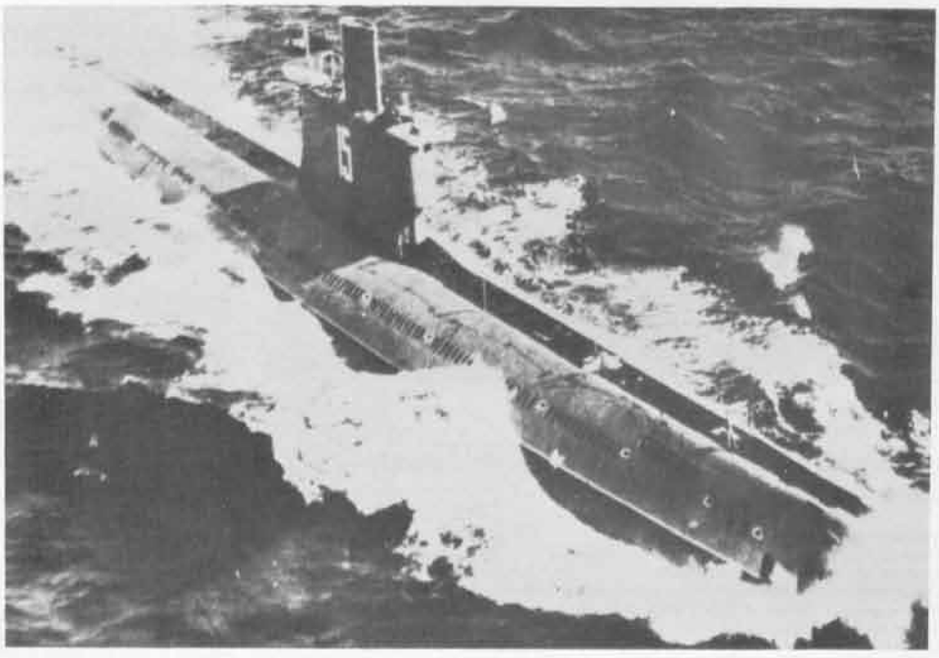
12 + 1 Ex-CHINESE "ROMEO" CLASS (PATROL TYPE)

Displacement, tons: 1 400 surfaced; 1 800 dived
Dimensions, feet (metres): 251·9 × 23·9 × 18 *(76·8 × 7·3 × 5·5)*
Torpedo tubes: 6—21 in *(533 mm)* (bow); 2—21 in *(533 mm)* (stern); 18 torpedoes or 36 mines
Main machinery: 2 diesels; 4 000 bhp; 2 electric motors; 4 000 hp; 2 shafts
Speed, knots: 17 surfaced; 14 dived
Range, miles: 16 000 at 10 knots (surfaced)
Complement: 54

Two transferred from China 1973, two in 1974 and three in 1975. Local building at Mayang Do provided two more in 1976. Continuing programme with slightly different dimensions etc. Stationed on west coast (Yellow Sea).

Radar: Snoop Plate.

Sonar: Hercules.

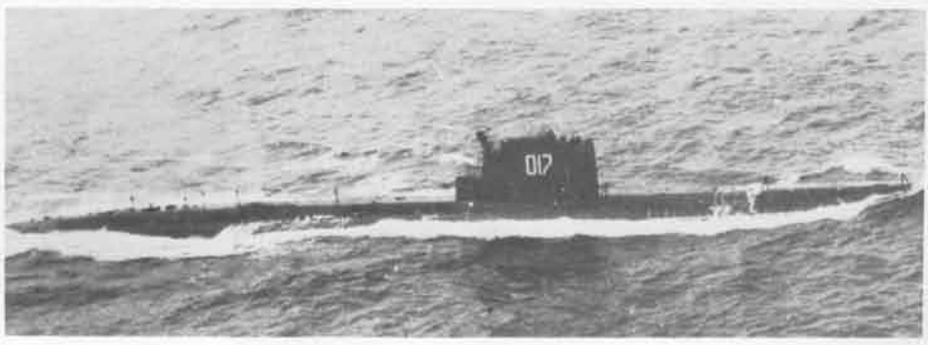


"ROMEO" Class

4 Ex-SOVIET "WHISKEY" CLASS (PATROL TYPE)

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·3 × 21·3 × 16·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* (bow) 2—16 in *(406 mm)* (stern); 14 torpedoes carried normally (or 28 mines)
Main machinery: 2 diesels; 4 000 bhp; 2 electric motors; 2 700 hp; 2 shafts
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots (surfaced)
Complement: 54

Stationed on east coast (Sea of Japan).



"WHISKEY" Class

FRIGATES

4 "NAJIN" CLASS

3025 3026 3027 +1

Displacement, tons: 1 500
Dimensions, feet (metres): 328 × 32·8 × 8·9 *(100 × 10 × 2·7)*
Guns: 2—3·9 in *(100 mm)*/56 (single); 4—57 mm (twin); 4—25 mm (twin vertical); 8—14·5 mm (twins)
A/S weapons: 2—MBU 1800; 2 DC racks; 2 A/S mortars
Torpedo tubes: 3—21 in *(533 mm)*
Mines: 30 (estimated)
Main engines: 2 diesels; 15 000 bhp; 2 shafts
Speed, knots: 26
Range, miles: 4 000 at 14 knots
Complement: 180

Built in North Korea. First laid down 1971, completed 1973; second completed 1975; third completed 1976; fourth laid down 1976, completed 1979.

Radar: Surface search: Skin Head, Pot Head.
IFF: Ski Pole.

Sonar: Hull-mounted and VDS.

"NAJIN" Class

LIGHT FORCES

8 Ex-SOVIET "OSA 1" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single cells)
Guns: 4—30 mm (1 twin fwd, and aft)
Main engines: 3 diesels; 12 000 bhp = 36 knots
Range, miles: 800 at 25
Complement: 30

The combination of the "Osa" squadron and the "Komar" units, both armed with the 23 mile range Styx missile, provides a powerful striking force on the South Korean border and within 250 miles of Japan.

Radar: Fire control: Square Tie, Drum Tilt.
IFF: High Pole and Square Head.

"OSA 1" Class *1970*

6 Ex-SOVIET and 4 NORTH KOREAN "KOMAR" CLASSES (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 68 standard; 75 full load
Dimensions, feet (metres): 87·9 × 20·3 × 4·9 *(26·8 × 6·2 × 1·5)*
Missiles: SSM; 2—SS-N-2 (single cells)
Guns: 2—25 mm (1 twin fwd)
Main engines: 4 diesels; 4 shafts; 4 800 bhp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

See note under "Osa" class above. Six transferred by the USSR, four built locally. Another class, "Sohung", may be the North Korean version of the "Komar".

Radar: Fire control: Square Tie.
IFF: High Pole and Dead Duck.

"KOMAR" Class

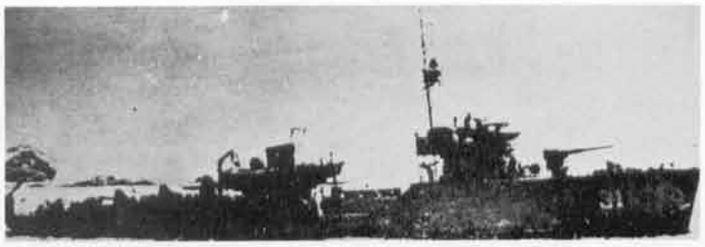
2 Ex-SOVIET "TRAL" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 475
Dimensions, feet (metres): 203·5 pp × 23·8 × 7·8 *(62 × 7·2 × 2·4)*
Guns: 1—3·9 in *(100 mm)*/56; 3—37 mm (singles); 4—12·7 mm MGs
A/S weapons: 2 DC racks
Mines: 30
Main engines: 2 diesels; 2 800 hp; 2 shafts = 18 knots
Complement: 52

An elderly class of Fleet Minesweepers of which eight were transferred by the USSR in mid-1950s. Used for escort purposes.
All originally commissioned in 1938. One (ex-*Strela*, ex-T 1) was transferred to Soviet Pacific Fleet via Panama Canal in 1939 and another (ex-*Paravan*, ex-T 5) at the same time via Suez.

Radar: Surface search: Skin Head.
IFF: Yard Rake.

Sonar: Hull-mounted and VDS.



"TRAL" Class

3 "SARIWAN" CLASS (LARGE PATROL CRAFT)

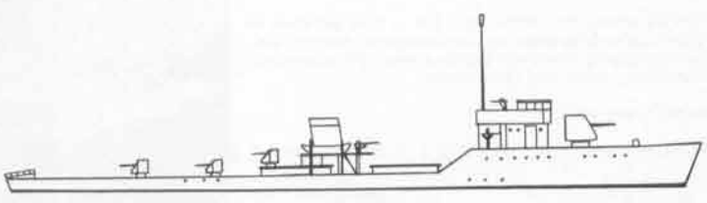
725 726 727(?)

Displacement, tons: 600 standard; 650 full load
Dimensions, feet (metres): 203·7 × 23·9 × 7·8 *(62·1 × 7·3 × 2·4)*
Guns: 1—100 mm; 2—37 mm (twin); 12/16—14·5 mm (quad—possibly ZPU-4 type)
A/S weapons: DC rails
Mines: 30
Main engines: 2 diesels; 3 000 bhp; 2 shafts = 21 knots
Complement: 65-70

Built in North Korea in the mid-1960s.

Radar: Surface search: Skin Head.
Navigation: Don 2.
IFF: Ski Pole or Yard Rake.

Sonar: Hull-mounted.



"SARIWAN" Class

6 Ex-CHINESE "HAINAN" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 360 standard; 400 full load
Dimensions, feet (metres): 197 × 24 × 6·1 *(60 × 7·4 × 2·1)*
Guns: 2—3 in *(76 mm)*; 4—25 mm (twins)
A/S weapons: 4 MBU 1800; 2 DCTs; 2 DC racks
Main engines: Diesels; 8 000 shp = 28 knots
Range, miles: 1 000 at 10 knots (est)
Complement: 60

Transferred in 1975 (2), 1976 (2), 1978 (2).

"HAINAN" Class *1976*

15 SOVIET and NORTH KOREAN "SO 1" CLASSES (LARGE PATROL CRAFT)

Displacement, tons: 170 light; 215 normal
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 1—85 mm; 2—37 mm (twin); 4—14·5 mm MGs (North Korean version);
4—25 mm/L 70 (Soviet version)
Main engines: 3 diesels; 7 500 bhp = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Six transferred by the USSR in 1957-61. Remainder built in North Korea—of modified form.

Radar: Fire control: Pot Head.
Navigation: Don 2.
IFF: Ski Pole.

Soviet "SO 1" Class (guns differ in North Korean version) *1972*

1 or 2 Ex-SOVIET "ARTILLERIST" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 240
Dimensions, feet (metres): 160·8 × 19 × 6·5 *(49 × 5·8 × 2)*
Guns: 1—3·9 in *(100 mm)*; 2—37 mm (singles); 4/6—25 mm (twin, vertical)
Main engines: 2 diesels; 3 300 bhp; 2 shafts = 25 knots
Complement: 30

Transferred in 1950s.

6 "TAECHONG" CLASS (LARGE PATROL CRAFT)

A North Korean class of the mid-1970s in series production of about two a year.

15 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin); 4—25 mm (abaft bridge);
2—3 in *(75 mm)* recoilless rifles (bow)
A/S weapons: 8 DCs
Main engines: 4 diesels; 4 800 bhp = 30 knots
Mines: Rails can be fitted for 10 mines
Range, miles: 800 at 17 knots
Complement: 25

Acquired from China since 1967.

Radar: Surface search: Skin Head.

"SHANGHAI II" Class

4 "CHODO" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 130 (estimated)
Dimensions, feet (metres): 140 × 19 × 8·5 *(42·7 × 5·8 × 2·6)*
Guns: 4—37 mm (single); 4—25 mm (twin, vertical)
Main engines: Diesels; 2 shafts; 6 000 bhp = 25 knots
Range, miles: 2 000 at 10 knots
Complement: 40

Built in North Korea in mid-1960s.

Radar: Surface search: Skin Head.
Navigation: Don.

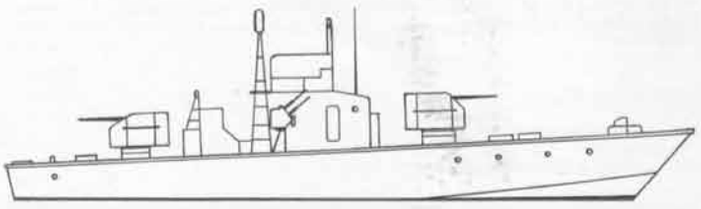
"CHODO" Class

8 Ex-CHINESE "SHANTOU" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 80
Dimensions, feet (metres): 83·5 × 19 × 6·9 *(25·5 × 5·8 × 2)*
Guns: 4—37 mm (twins); 4—12·7 mm (twins) or 2—76 mm recoilless rifles (twin)
A/S weapons: 8 DCs
Main engines: 4 diesels; 3 000 bhp = 28 knots
Range, miles: 500 at 28 knots; 750 at 15 knots
Complement: 17

Transferred from China in 1968.

Radar: Surface search: Skin Head.
Navigation: Don.



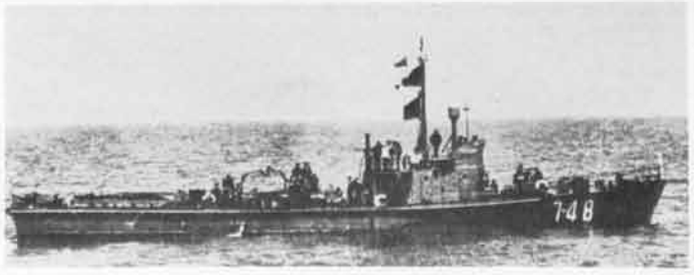
"SHANTOU" Class

4 "K-48" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 110 (estimated)
Dimensions, feet (metres): 125 × 18 × 4·9 *(38·1 × 5·5 × 1·5)*
Guns: 1—3 in *(76 mm)*/50 (fwd); 3—37 mm (single);
4/6—14·5 mm MGs (twin)
Main engines: 2 diesels; 4/5 000 bhp; 2 shafts = 24 knots

Built in North Korea in late 1950s.

Radar: Surface search: Skin Head.



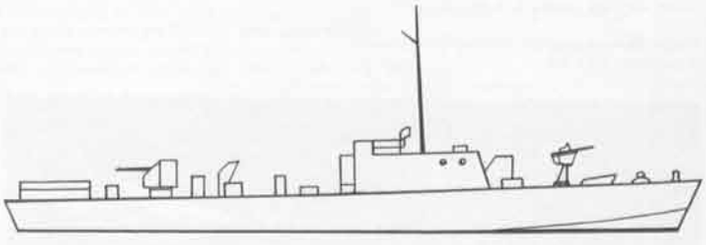
"K-48" Class

20 Ex-SOVIET "MO IV" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 56 standard
Dimensions, feet (metres): 88·5 × 13·1 × 4·9 *(27 × 4 × 1·5)*
Guns: 1—37 mm; 1/2—14·5 mm MGs
Main engines: 2 Skoda diesels; 2 600 hp = 25 knots
Complement: 20

Transferred in 1950s. Built in 1945-47. Wooden hulls.

Radar: One navigation set.



"MO IV" Class

62 "CHAHO" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 80 full load
Dimensions, feet (metres): 90·9 × 20 × 5·9 *(27·7 × 6·1 × 1·8)*
Guns: 8—20 mm; 40 tube rocket launchers; 4—14·5 mm
Main engines: 4 diesels; 4 800 shp = 38-40 knots
Complement: 10-12 (est)

Reported as building in North Korea since 1974. Based on "P 6" hull.

Radar: One navigation set.

"CHAHO" Class

34 "CHONG-JIN" CLASS (FAST ATTACK CRAFT—GUN)

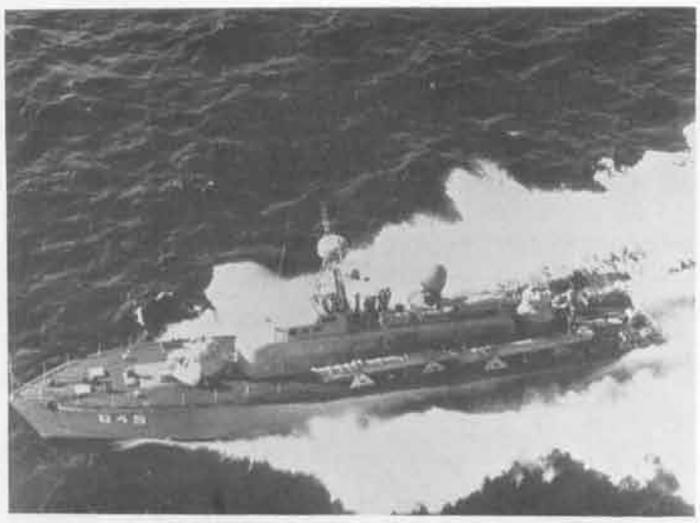
Particulars similar to "Chaho" class of which this is an improved version. Building began about 1975.

4 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twins)
Torpedo tubes: 4—21 *(533 m)* (single)
A/S weapons: 12 DCs
Main engines: 3 diesels; 3 shafts; 12 000 bhp = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

Transferred in 1973-74.

Radar: Search/Navigation: Pot Drum.
Fire control: Drum Tilt.
IFF: High Pole and Square Head.



Soviet "SHERSHEN" Class *1970*

64 SOVIET "P 6" and 8 "SINPO" CLASSES (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (original); 2—37 mm (in some in addition) (see notes)
Torpedo tubes: 2—21 in (or mines or DC) (see notes)
Main engines: 4 diesels; 4 800 hp; 4 shafts = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

There is a growing number of these craft in North Korea with local building programme in hand of a modified form. Originally 45 were transferred by the USSR. A further development has been that the six boats of the "Sinpo" class now carry six 14·5 mm machine guns and no torpedo tubes. Pennant numbers in 400 series.

Radar: Surface search: Pot Head or Skin Head.
Navigation: One set.

"P 6" Class *1972*

"SINPO" Class

12 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 25
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—MGs
Torpedo tubes: 2—18 in
Main engines: 2 diesels; 2 200 bhp = 50 knots.
Range, miles: 400 at 13 knots
Complement: 12

Built in 1951-57. Aluminium hulls.

Radar: Surface search: Skin Head.
Navigation: One set.

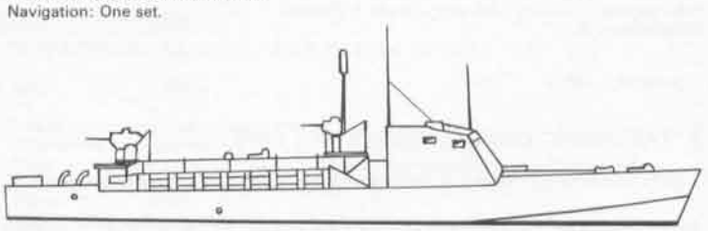
"P 4" Class *1971*

15 "IWON" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 40
Dimensions, feet (metres): 63 × 12 × 5 *(19·2 × 3·7 × 1·5)*
Guns: 4—25 mm (twin, vertical)
Torpedo tubes: 2—21 in *(533 mm)*

Built in North Korea in late 1950s. Similar to older Soviet "P 2" class design.

Radar: Surface search: Skin Head.
Navigation: One set.



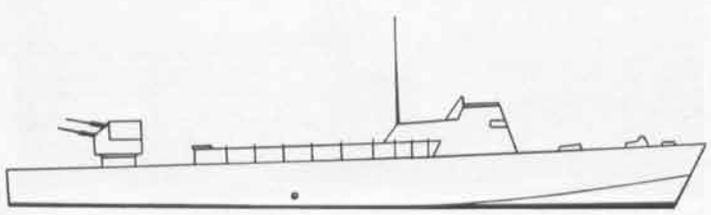
"IWON" Class

6 "AN JU" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 35
Dimensions, feet (metres): 65 × 12 × 6 *(19·8 × 3·7 × 1·8)*
Guns: 2—25 mm (twin, vertical)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: Diesels; 4 shafts
Range, miles: 1 300 at 20 knots
Complement: 20

Built in North Korea in 1960s.

Radar: One navigation set.



"AN JU" Class

72 "KU SONG" and "SIN HUNG" CLASSES (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 35
Dimensions, feet (metres): 60 × 11 × 5·5 *(18·3 × 3·4 × 1·7)*
Guns: 2—14·5 mm (twin)
Torpedo tubes: 2—18 in or 2—21 in

Built in North Korea mid-1950s to 1970. Frequently operated on South Korean border. All resemble the Soviet "D-3" class of over 25 years ago. The two classes are apparently very similar.

Radar: One navigation set.

10 SOVIET "KM 4" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 10
Dimensions, feet (metres): 46 × 10·5 × 3 *(14 × 3·2 × 0·9)*
Guns: 1—36 mm; 1—14·5 mm MG
Main engines: Petrol; 146 shp; 2 shafts
Complement: 10

Built in North Korea to Soviet design.

20 LIGHT GUNBOATS

Believed to be for inshore patrols. Locally built.

AMPHIBIOUS FORCES

Note: 18 LCMs now in service with others building in North Korea. Used on South Korean border.

75 "NAMPO" CLASS

Displacement, tons: 82
Dimensions, feet (metres): 84·2 × 20 × 6 *(27·7 × 6·1 × 1·8)*
Guns: 6—14·7 mm MGs
Main engines: Diesels; 4 shafts; 4 800 bhp = 40 knots
Range, miles: 375 at 40 knots
Complement: 19

A class of assault landing craft based on a "P 6" hull. Building began about 1975. Have a retractable ramp in bows.

"NAMPO" Class

9 "HANCHON" CLASS (LCUs)

SERVICE FORCES

Five to ten large trawlers and small cargo vessels used as store ships. Some of the trawlers operate on the South Korean border where several have been sunk over the years. Some 100 craft in all of various types are employed as support craft with a secondary mission of coastal patrol.

KOREA, Republic (South)

Note: See Addenda for additional Light Forces

Ministerial

Minister of National Defence:
Choo Young Bok

Senior Flag Officers

Chief of Naval Operations:
Admiral Kim Chong-Kon
Commander RoK Fleet:
Vice-Admiral Lee Eun-Soo

Diplomatic Representation

Defence Attaché in London:
Colonel Song Kyu Kim
Naval Attaché in Paris:
Colonel Ock-Sup Yoon (Army)
Naval Attaché in Washington:
Captain Choong Hah Choi

Personnel

(a) 1981: 20 000 (approx) Navy, 20 000 (approx) Marine Corps
(b) 3 years' (Navy) national service with a proportion of ratings and all marines being volunteers (35 000 total)

Bases

Major: Chinhae (Fleet HQ)
Minor: Cheju, Mokpo, Mukho, Pohang, Inchon, Pusan

Marine Corps

Over 20 000 organised into one division and one brigade plus smaller and support units. Since October 1973 the ROK Marine Force has been placed directly under the ROK Navy command with a Vice Chief of Naval Operations for Marine Affairs replacing the Commandant of Marine Corps.

Naval Aviation

The ROK Navy operates 23 S-2 A/F Tracker anti-submarine aircraft. Approximately ten utility aircraft and several helicopters are operated by the ROK Marine Corps. Additional Tracker aircraft are being acquired.
Base: Kimhae.

Pennant Numbers

A number of pennant numbers was changed in June 1978. These have been included here but some of the Light Forces retain their original numbers. Occidentals should note that pennant numbers including —0 and —4 are not used in this, as in several other Asiatic navies.

Strength of the Fleet

Type	*Active*	*Building (Proposed)*
Destroyers	10	—
Frigates	7	1 (3?)
Corvettes	3	—
Fast Attack Craft—Missile	9	—
Fast Attack Craft—Patrol	6	—
Large Patrol Craft	10	—
Coastal Patrol Craft	22	—
MSCs	8	—
MSB	1	—
LSTs	8	—
LSMs	12	—
LCUs	4	—
Repair Ship	1	—
Supply Ships	4	—
Tankers	4	—
Tugs	2	—
Survey Ships and Craft	6	—
Miscellaneous	1	—

Mercantile Marine

Lloyd's Register of Shipping:
1 426 vessels of 4 344 114 tons gross

DELETIONS

Frigates

1977 *Kang Won* (28 Oct), *Kyong Ki* (28 Dec) (ex-US "Cannon" class)

Corvettes

1977 *Han San, Ok Po* (15 Sep), *Ro Ryang, Myong Ryang* (28 Dec) (ex-US "PCE 827" class)

1979 *Pyok Pa, Ryul Po, Sa Chon* (ex-US "PCE 827" class)

Mine Warfare Forces

1977 *Kim Po, Ko Chang, Kum Hwa* (15 Sep) (ex-US "Albatros" class)

Service Forces

1979 *Chi Nam Po, Inchon* (ex-US Army "FS" type)

DESTROYERS

5 Ex-US "GEARING (FRAM I and II)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CHUNG BUK (ex-USS *Chevalier,* DD 805)	DD 915	Bath Iron Works Corporation, Bath, Maine	12 June 1944	29 Oct 1944	9 Jan 1945
JEONG BUK (ex-USS *Everett F. Larson,* DD 830)	DD 916	Bath Iron Works Corporation, Bath, Maine	4 Sep 1944	28 Jan 1945	6 Apr 1945
TAEJON (ex-USS *New,* DD 818)	DD 919	Consolidated Steel Corporation	14 Apr 1945	18 Aug 1945	5 Apr 1946
KWANG JU (ex-USS *Richard E. Kraus,* DD 849)	DD 921	Bath Iron Works Corporation, Bath, Maine	31 July 1945	2 Mar 1946	23 May 1946
KANG WON (ex-USS *William R. Rush,* DD 714)	DD 922	Federal S.B. and D.D. Co, Newark	19 Oct 1944	8 July 1945	21 Sep 1945

Displacement, tons: 2 425 standard; approx 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Aircraft: 1 Alouette helicopter
Guns: 6—5 in *(127 mm)*/38 (twin) (Mk 38);
1—20 mm Vulcan Gatling *(Chung Buk)*;
2—30 mm (twin Emerlek) *(Jeong Buk* only*)*
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes;
2 fixed Hedgehogs (Mk 11)
Main engines: 2 General Electric geared turbines
60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 32·5
Range, miles: 5 800 at 15 knots
Complement: 280

Chung Buk and *Jeong Buk* were converted to radar picket destroyers (DDR) in 1949; subsequently modernised under the US Navy's Fleet Rehabilitation and Modernisation programme—first pair to Fram II standards, others to Fram I. Fitted with small helicopter hangar and flight deck. Anti-ship torpedo tubes have been removed.

Aircraft: All to be converted to carry Alouette III helicopter as now carried in DD 915 and 916.

A/S weapons: 15-in Mk 32 torpedo tubes are fitted with liners to reduce them to 12·75-in.

Guns: Vulcan Gatlings installed on after hangar deck in 1976.

Radar: Surface search: SPS 10.
Air search: SPS 40.

Sonar: SQS 29 (hull-mounted).

JEONG BUK (old number) *1973*

Transfers: First pair on loan on 5 July 1972 and 30 October 1972 respectively and by purchase 31 January 1977. Second pair 23 February 1977 by sale. *Kang Won* by sale 1 July 1978.

2 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DAE GU (ex-USS *Wallace L. Lind,* DD 703)	DD 917	Bath Iron Works Corporation, Bath, Maine	Apr 1944	14 June 1944	8 Sep 1944
INCHON (ex-USS *De Haven,* DD 727)	DD 918	Federal S.B. & D.D. Co, Kearney, New Jersey	Oct 1943	9 Jan 1944	31 Mar 1944

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·4 × 5·8)*
Guns: 6—5 in *(127 mm)*/38 (twin) (Mk 38);
1—20 mm Vulcan Gatling *(Inchon* only*)*
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes;
2 fixed Hedgehogs (Mk 11)
Main engines: 2 General Electric geared turbines
60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Range, miles: 4 500 at 16 knots
Complement: 235

Both ships were modernised under the US Navy's Fleet Rehabilitation and Modernisation (FRAM II) programme. Fitted with small helicopter deck and hangar.

Radar: Surface search: SPS 10.
Air search: SPS 37 *(Inchon).*
SPS 40 *(Dae Gu).*

Sonar: SQS 29 (hull-mounted).
SQA 10 (VDS).

Transfers: December 1973 and by sale on 31 January 1977.

DAE GU (as USS *Wallace L. Lind*) *1967, USN*

3 Ex-US "FLETCHER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CHUNG MU (ex-USS *Erben,* DD 631)	DD 911	Bath Iron Works Corporation, Bath, Maine	28 Oct 1942	21 Mar 1943	28 May 1943
SEOUL (ex-USS *Halsey Powell,* DD 686)	DD 912	Bethlehem Steel, Staten Island, New York	4 Feb 1943	30 June 1943	25 Oct 1943
PUSAN (ex-USS *Hickox,* DD 673)	DD 913	Federal S.B. & D.D. Co, Kearney, New Jersey	12 Mar 1943	4 July 1943	10 Sep 1943

Displacement, tons: 2 050 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·4 × 18 *(114·8 × 12 × 5·5)*
Guns: 5—5 in *(127 mm)*/38 (single) (Mk 30); 10—40 mm/60 (2 quad, 1 twin Mk 1 or 2) except *Seoul* (none)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes;
2 Hedgehogs (Mk 10/11); DCs
Main engines: General Electric geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 35
Range, miles: 5 000 at 15 knots
Complement: 250

Radar: Surface search: SPS 10.
Air search: SPS 6.
Plus fire control (2) and navigation (1).

Sonar: SQS 20 (hull-mounted).

Transfers: DD 911, 1 May 1963; DD 912, 27 April 1968; DD 913, 15 November 1968 on loan. All purchased 31 January 1977.

SEOUL (old number) *1968, USN*

FRIGATES

1 NEW CONSTRUCTION

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
—	—	Hayundai SY, Mipo Bay, Ulsan	—	Sep 1980	?1982

Displacement, tons: 1 600
Missiles: SSM; 8 Harpoon
Gun: 1—5 in *(127 mm)*
Main engines: 2 General Electric LM 2500 gas turbines; 40 000 hp; 2 MTU 16V 538 diesels; 7 200 hp; 2 shafts (cp propellers)
Speed, knots: 35

Originally planned to build three more but this programme was cancelled due to expense.

1 Ex-US "RUDDEROW" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CHUNG NAM (ex-USS *Holt,* DE 706)	DE 821	Defoe Shipbuilding Co, Bay City, Michigan	Oct 1943	15 Dec 1943	9 June 1944

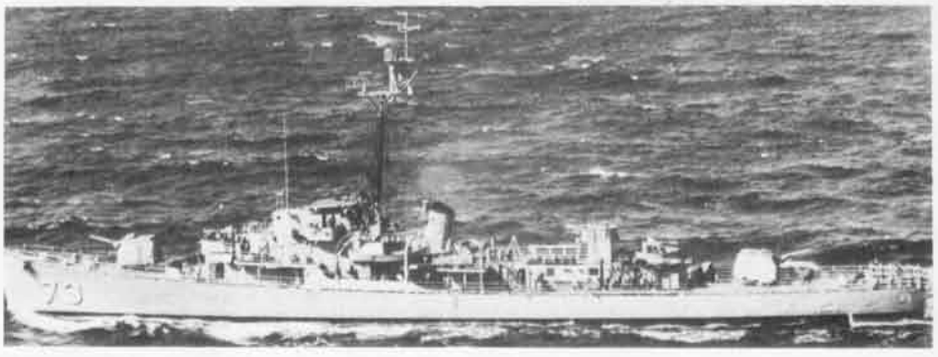
Displacement, tons: 1 450 standard; 1 890 full load
Dimensions, feet (metres): 306 × 37 × 14 *(93·3 × 11·3 × 4·3)*
Guns: 2—5 in *(127 mm)*/38 (single Mk 30); 4—40 mm/60 (twin Mk 1)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes; 1 Hedgehog; DCs
Main engines: Turbo-electric drive (General Electric geared turbines); 12 000 shp; 2 shafts
Boilers: 2 (Combustion Engineering)
Speed, knots: 24
Range, miles: 5 000 at 15 knots
Complement: 210

Former US destroyer escort of the TEV design.

Radar: Surface search: SPS 5.
Air search: SPS 6.

Sonar: Hull-mounted set.

Transfer: 19 June 1963 on loan and by purchase on 15 November 1974.



CHUNG NAM (old number) *1971, South Korean Navy*

6 Ex-US "CHARLES LAWRENCE" and "CROSLEY" CLASSES

Name	*No.*	*Builders*	*Launched*	*Commissioned*	*Transferred*
KYONG NAM (ex-USS *Cavallaro,* APD 128)	APD 822	Defoe Shipbuilding Co, Bay City, Michigan	15 June 1944	13 Mar 1945	Oct 1959
AH SAN (ex-USS *Harry L. Corl,* APD 108)	APD 823	Bethlehem Shipbuilding Co, Higham, Mass	1 Mar 1944	5 June 1945	June 1966
UNG PO (ex-USS *Julius A. Raven,* APD 110)	APD 825	Bethlehem Shipbuilding Co, Higham, Mass	3 Mar 1944	28 June 1945	June 1966
KYONG PUK (ex-USS *Kephart,* APD 61)	APD 826	Charleston Navy Yard, South Carolina	6 Sep 1943	7 Jan 1944	Aug 1967
JONNAM (ex-USS *Hayter,* APD 80)	APD 827	Charleston Navy Yard, South Carolina	11 Nov 1943	16 Mar 1944	Aug 1967
CHI JU (ex-USS *William M. Hobby,* APD 95)	APD 828	Charleston Navy Yard, South Carolina	11 Feb 1944	4 Apr 1945	Aug 1967

Displacement, tons: 1 400 standard; 2 130 full load
Dimensions, feet (metres): 306 × 37 × 14 (screws) *(93·3 × 11·3 × 4·3)*
Guns: 1—5 in *(127 mm)*/38; 6—40 mm (twin)
A/S weapons: DCs
Main engines: Turbo-electric (General Electric turbines); 12 000 shp; 2 shafts
Boilers: 2 (Foster-Wheeler "D" Express)
Speed, knots: 23·6
Range, miles: 5 500 at 15 knots
Complement: 200
Troop capacity: 160

All begun as destroyers escorts (DE), but converted during construction to high-speed transports (APD).
In Korean service four latter ships originally rated as gunboats (PG); changed in 1972 to APD. All are fitted to carry approximately 160 troops. Can carry four LCVPs.
Two different configurations; "Charles Lawrence (APD 37)" class with high bridge; "Crosley (APD 87)" class with low bridge. Both classes now have tripod foremast.
All purchased by South Korea 15 November 1974.

KYONG NAM (with old foremast and number)

CORVETTES

3 Ex-US "AUK" CLASS

Name	*No.*	*Builders*	*Launched*
SHIN SONG (ex-USS *Ptarmigan,* MSF 376)	PCE 711	Savannah Machine & Foundry Co, Savannah, Georgia	15 Jan 1944
SUNCHON (ex-USS *Speed,* MSF 116)	PCE 712	American S.B. Co, Lorain, Ohio	15 Oct 1942
KOJE (ex-USS *Dextrous,* MSF 341)	PCE 713	Gulf S.B. Corporation, Madisonville, Texas	8 Sep1943

Displacement, tons: 890 standard; 1 250 full load
Dimensions, feet (metres): 221·2 × 32·2 × 10·8 *(67·4 × 9·8 × 3·1)*
Guns: 2—3 in *(76 mm)*/50 (single); 4—40 mm (twin); 4—20 mm (twin)
A/S weapons: 3 (1 triple) Mk 32 A/S torpedo tubes; 1 Hedgehog; DCs
Main engines: Diesel-electric (General Motors diesels); 3 532 bhp; 2 shafts = 18 knots
Complement: approx 110

Former US Navy minesweepers (originally designated AM). PCE 711 transferred to ROK Navy in July 1963, PCE 712 in November 1967 and PCE 713 in December 1967.
The minesweeping gear was removed prior to transfer and a second 3-in gun fitted aft; additional anti-submarine weapons also fitted.

A/S weapons: Mk 32 tubes fitted with 12·75-in liners.

Radar: Surface search and navigation.

Sonar: One hull-mounted set.

SHIN SONG (old number)

LIGHT FORCES

Note: It is reported that, with the cancellation of the remainder of the new class of frigates, 20 FAC (Missile) are to be built.

8 TACOMA PSMM 5 TYPE (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
PAEK KU 52	PGM 352	Tacoma Boatbuilding Co, Tacoma, Wash.	14 Mar 1975
PAEK KU 53	PGM 353	Tacoma Boatbuilding Co, Tacoma, Wash.	14 Mar 1975
PAEK KU 55	PGM 355	Tacoma Boatbuilding Co, Tacoma, Wash.	1 Feb 1976
PAEK KU 56	PGM 356	Tacoma Boatbuilding Co, Tacoma, Wash.	1 Feb 1976
PAEK KU 57	PGM 357	Korea—Tacoma International	1977
PAEK KU 58	PGM 358	Korea—Tacoma International	1977
PAEK KU 59	PGM 359	Korea—Tacoma International	1977
PAEK KU 61	PGM 361	Korea—Tacoma International	1978

Displacement, tons: approx 250 full load
Dimensions, feet (metres): 165 × 24 × 9·5 *(50·3 × 7·3 × 2·9)*
Missiles: SAM; 4 Standard launchers (1 reload each) (Harpoon planned)
Guns: 1—3 in *(76 mm)*/50 (single Mk 34)
1—40 mm (aft; may have been removed with missile installation)
2—5 MGs
Main engines: 6 TF 35 gas turbines (Avco Lycoming); 16 800 hp;
2 shafts (cp propellers) = 40+ knots
Range, miles: 2 400 at 18 knots
Complement: 32 (5 officers, 27 enlisted men)

Aluminium hulls. Based on the US Navy's "Asheville" (PG 84) design. Tacoma design designation was PSMM for multi-mission patrol ship. *Paek Ku 52* launched 17 February 1975.

Engineering: The six TF 35 gas turbines turn two propeller shafts; the "Asheville" class ships have combination gas turbine-diesel power plants. In the South Korean units one, two, or three turbines can be selected to provide each shaft with a variety of power settings.

PAEK KU 52 (old pennant number) *1975, Alfred W. Harris*

1 Ex-US "ASHEVILLE" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
PAEK KU 51 (ex-USS *Benicia*, PG 96)	PGM 351 (ex-PGM 11, ex-PGM 101)	Tacoma Boatbuilding Co, Tacoma, Wash.	25 Apr 1970

Displacement, tons: 225 standard; 245 full load
Dimensions, feet (metres): 164·5 × 23·8 × 9·5 *(50·1 × 7·3 × 2·9)*
Missiles: SAM; Standard launchers
Guns: 1—3 in *(76 mm)*/50 (single Mk 34); 1—40 mm/60 (single Mk 3); 4—5 MGs (twin)
Main engines: CODAG; 2 diesels (Cummins); 1 450 bhp; 2 shafts = 16 knots;
1 gas turbine (General Electric); 13 300 shp; 2 shafts = 40+ knots
Range, miles: 1 700 at 16 knots
Complement: 25

Former US "Asheville" class patrol gunboat. Launched 20 December 1969; transferred to ROK Navy on 15 October 1971 and arrived in South Korea in January 1972. No anti-submarine sensors or weapons are fitted.

Missiles: During 1971, while in US Navy service, this ship was fitted experimentally with one launcher for the Standard surface-to-surface missile. The box-like container/launcher held two missiles. Launchers fitted in South Korea 1975-76.

PAEK KU 51 (old pennant number) *1972*

6 CPIC TYPE (FAST ATTACK CRAFT—PATROL)

Name	*No.*	*Builders*	*Commissioned*
KILURKI 11	PKM 211	Tacoma Boatbuilding Co, Tacoma, Wash.	1975
KILURKI 12	PKM 212	Korea Tacoma International	1979
KILURKI 13	PKM 213	Korea Tacoma International	1979
KILURKI 15	PKM 215	Korea Tacoma International	1979
KILURKI 71	PKM 271	Korea Tacoma International	1979
KILURKI 72	PKM 272	Korea Tacoma International	1979

Displacement, tons: 71·25 full load
Dimensions, feet (metres): 100 × 18·5 × 6 *(30·5 × 5·6 × 1·8)*
Guns: 2—30 mm Emerlek (twin); 1—20 mm
Main engines: 3 gas turbines (Avco Lycoming); 6 750 shp; 3 shafts = 45 knots;
2 auxiliary diesels (Volvo); 500 bhp
Complement: 11

Kilurki II transferred on 1 August 1975. A further five were to be built in South Korea but this order has been cancelled.

Missiles: SSM may be fitted.

CPIC on trials *1974, USN*

8 Ex-US COAST GUARD "CAPE" CLASS (LARGE PATROL CRAFT)

PB 3 (ex-USCGC *Cape Rosier*, WPB 95333)
PB 5 (ex-USCGC *Cape Sable*, WPB 95334)
PB 6 (ex-USCGC *Cape Providence*, WPB 95335)
PB 8 (ex-USCGC *Cape Porpoise*, WPB 95327)
PB 9 (ex-USCGC *Cape Falcon*, WPB 95330)
PB 10 (ex-USCGC *Cape Trinity*, WPB 95331)
PB 11 (ex-USCGC *Cape Darby*, WPB 95323)
PB 12 (ex-USCGC *Cape Kiwanda*, WPB 95329)

Displacement, tons: 105 full load
Dimensions, feet (metres): 95 × 20 × 6 *(28·9 × 6·1 × 1·8)*
Guns: 1—.5 MG; 1—81 mm mortar; several .3 MGs
Main engines: 4 diesels (Cummins); 2 324 bhp; 2 shafts = 21 knots
Range, miles: 500 at 21 knots
Complement: 13

Former US Coast Guard steel hulled patrol craft. Built in 1958-1959. Transferred to South Korea in September 1968.
Combination machine gun/mortar mount is forward; single light machine guns are mounted aft.

PB 11

2 PATROL TYPE (LARGE PATROL CRAFT)

PK 10 **PK 11**

Displacement, tons: 120
Dimensions, feet (metres): 100 *(30·5)*
Guns: 1—40 mm; 1—20 mm
Main engines: Diesels (Mercedes-Benz-MTU); 10 200 bhp; 3 shafts = 35 knots

Two patrol craft reported built in South Korea in 1971-72.

3 "SCHOOLBOY I" and 6 "SCHOOLBOY II" CLASSES (COASTAL PATROL CRAFT)

CHEBI 51 PKM 151 **CHEBI 52** PKM 152 **CHEBI 57** PKM 157 **+6**

Displacement, tons: 30
Dimensions, feet (metres): 72 × 11·5 × 3·6 *(21·9 × 3·5 × 1·2)*
Guns: 2—20 mm (single)
Main engines: 2 MTU diesels; 1 600 bhp; 2 shafts

Built in South Korea, with the first units completed in 1973.
The numbers of the "Schoolboy" class (derivation unknown) has been over-estimated for some years.

9 US SEWART TYPE (COASTAL PATROL CRAFT)

FB 1 **FB 3** **FB 6** **FB 8** **FB 10**
FB 2 **FB 5** **FB 7** **FB 9**

Displacement, tons: 33 full load
Dimensions, feet (metres): 65 × 16 × — *(19·8 × 4·9 × —)*
Guns: 2—20 mm (single); 3 MGs
Main engines: 3 diesels (General Motors); 1 590 bhp; 3 shafts = 25 knots
Range, miles: 1 200 at 17 knots
Complement: 7

These craft were built in the USA by Sewart. The design is adapted from a commercial 65 ft craft. Referred to as "Toksuuri" No. 1 etc. by the South Koreans.
Transferred to South Korea in August 1967.

FB 10 on marine railway

4 US SEWART TYPE (COASTAL PATROL CRAFT)

SB 1 **SB 2** **SB 3** **SB 5**

Displacement, tons: 9·25 full load
Dimensions, feet (metres): 40 × 12 × 3 *(12·2 × 3·7 × 0·9)*
Guns: 1—5 MG; 2—3 MGs
Main engines: 2 diesels (General Motors); 500 bhp; 2 shafts = 31 knots
Complement: 7

These are aluminium hulled craft built in the USA by Sewart.
Transferred to South Korea in 1964.

MINE WARFARE FORCES

Note: *Pung To* ("LSM-1" class) serves as mine force flagship. See under Amphibious Forces.

8 Ex-US "MSC 268" and "294" CLASSES (MINESWEEPERS COASTAL)

Name	*No.*	*Builders*	*Commissioned*
KUM SAN (ex-US *MSC 284*)	MSC 551	Peterson Builders, Wisconsin	1959
KO HUNG (ex-US *MSC 285*)	MSC 552	Peterson Builders, Wisconsin	1959
KUM KOK (ex-US *MSC 286*)	MSC 553	Peterson Builders, Wisconsin	1959
NAM YANG (ex-US *MSC 295*)	MSC 555	Peterson Builders, Wisconsin	1963
NA DONG (ex-US *MSC 296*)	MSC 556	Peterson Builders, Wisconsin	1963
SAM CHOK (ex-US *MSC 316*)	MSC 557	Peterson Builders, Wisconsin	1968
YONG DONG (ex-US *MSC 320*)	MSC 558	Peterson Builders, Wisconsin	1975
OK CHEON (ex-US *MSC 321*)	MSC 559	Peterson Builders, Wisconsin	1975

Displacement, tons: 320 light; 370 full load
Dimensions, feet (metres): 145·4 × 27·2 × 12 (screws) *(44·3 × 8·3 × 3·6)*
Guns: 2—20 mm; 3 MGs
Main engines: Diesels; 1 200 bhp; 2 shafts = 14 knots
Complement: Approx 40

Built by the USA specifically for transfer under the Military Aid Programme. Wooden hulls with non-magnetic metal fittings.
Kum San transferred to South Korea in June 1959, *Ko Hung* in September 1959, *Kum Kok* in November 1959, *Nam Yang* in September 1963, *Na Dong* in November 1963, *Sam Chok* in July 1968, *Yong Dong* and *Ok Cheon* on 2 October 1975.

YONG DONG (old pennant number) *5/1975, Peterson Builders*

1 Ex-US MSB

Name	*No.*
PI BONG (ex-US *MSB 2*)	MSB 1

Displacement, tons: 30 light; 39 full load
Dimensions, feet (metres): 57·2 × 15·3 × 4 *(17·4 × 4·7 × 1·2)*
Guns: MGs
Main engines: 2 geared diesels (Packard); 600 bhp; 2 shafts = 12 knots

Transferred on 1 December 1961 and by sale on 2 July 1975. Wooden hull.

PI BONG *1969, South Korean Navy*

AMPHIBIOUS FORCES

8 Ex-US "1-510" and "511-1152" CLASSES (LSTs)

Name	*No.*	*Commissioned*
UN BONG (ex-USS *LST 1010*)	LST 671	25 Apr 1944
DUK BONG (ex-USS *LST 227*)	LST 672	14 Oct 1943
BI BONG (ex-USS *LST 218*)	LST 673	12 Aug 1943
KAE BONG (ex-USS *Berkshire County*, LST 288)	LST 675	20 Dec 1943
WEE BONG (ex-USS *Johnson County*, LST 849)	LST 676	16 Jan 1945
SU YONG (ex-USS *Kane County*, LST 853)	LST 677	11 Dec 1945
BUK HAN (ex-USS *Lynn County*, LST 900)	LST 678	28 Dec 1944
HWA SAN (ex-USS *Pender County*, LST 1080)	LST 679	29 May 1945

Displacement, tons: 1 653 standard; 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 (screws) *(100 × 15·2 × 4·3)*
Guns: 6 or 8—40 mm
Main engines: Diesels; 1 700 bhp; 2 shafts = 11·6 knots
Complement: 110

Former US Navy tank landing ships. Cargo capacity 2 100 tons. Carry two LCVPs and 20 tanks. *Un Bong* transferred to South Korea in February 1955, *Duk Bong* in March 1955, *Bi Bong* in May 1955, *Kae Bong* in March 1956, *Wee Bong* in January 1959, *Su Yong* and *Buk Han* in December 1958, and *Hwa San* in October 1958. All purchased 15 November 1974.

Launch dates: 671, 29 Mar 1944; 672, 21 Sep 1943; 673, 20 July 1943; 675, 7 Nov 1943; 676, 30 Dec 1944; 677, 17 Nov 1944; 678, 9 Dec 1944; 679, 2 May 1945.

DUK BONG (old number)

1 Ex-US "ELK RIVER" CLASS (LSMR)

Name	*No.*	*Builders*
SI HUNG (ex-USS *St Joseph River*, LSMR 527)	LSMR —	Brown S.B. Co, Houston, Texas

Displacement, tons: 944 standard; 1 084 full load
Dimensions, feet (metres): 206·2 × 34·5 × 10 *(62·9 × 10·5 × 3)*
Guns: 1—5 in *(127 mm)*/38; 2—40 mm; 4—20 mm
Rocket launchers: 8 twin Mk 105 launchers for 5 in rockets
Main engines: 2 diesels (General Motors); 2 800 bhp; 2 shafts = 12·6 knots
Complement: Approx 140

Former US Navy landing ship completed as a rocket-firing ship to support amphibious landing operations. Launched on 19 May 1945, transferred to South Korea on 15 September 1960 and purchased 15 November 1974. Configuration differs from conventional LSM type with "island" bridge structure and 5-in gun aft; no bow doors.

SI HUNG (old number) *1967, South Korean Navy*

11 Ex-US "LSM 1" CLASS

Name	*No.*
TAE CHO (ex-USS *LSM 546*)	LSM 651
TYO TO (ex-USS *LSM 268*)	LSM 652
KA TOK (ex-USS *LSM 462*)	LSM 653
KO MUN (ex-USS *LSM 30*)	LSM 655
PIAN (ex-USS *LSM 96*)	LSM 656
PUNG TO (ex-USS *LSM 54*)	LSML
WOL MI (ex-USS *LSM 57*)	LSM 657
KI RIN (ex-USS *LSM 19*)	LSM 658
NUNG RA (ex-USS *LSM 84*)	LSM 659
SIN MI (ex-USS *LSM 316*)	LSM 661
UL RUNG (ex-USS *LSM 17*)	LSM 662

Displacement, tons: 743 beaching; 1 095 full load
Dimensions, feet (metres): 203·5 × 34·6 × 8·5 *(62 × 10·5 × 2·6)*
Guns: 2—40 mm (twin); several 20 mm
Main engines: 2 diesels (direct drive; Fairbanks-Morse except *Tyo To* General Motors); 2 800 bhp; 2 shafts = 12·5 knots
Complement: Approx 60

Former US Navy medium landing ships. Built 1944-45. LSM 651, 652, and 653 transferred to South Korea in 1955; others in 1956. *Sin Mi* served in Indochina as French L 9014 and *Ul Rung* as French L 9017 during 1954-55; returned to USA in October 1955 and retransferred to South Korea in autumn 1956. All purchased 15 November 1974.
Pung To serves as mine force flagship fitted with mine-laying rails and designated LSML. Arrangement of 20 mm guns differs; some ships have two single mounts adjacent to forward 40 mm mount on forecastle; other 20 mm guns along sides of cargo well.

TYO TO (old number) 1969

4 Ex-US "LCU 501" CLASS

MULKAE 71 (ex-USS *LCT 531*)
MULKAE 72
MULKAE 73
MULKAE 75

Displacement, tons: 309 full load
Dimensions, feet (metres): 119·1 × 32·7 × 5 *(36·3 × 9·9 × 1·5)*
Main engines: Diesels (Gray Marine); 675 bhp; 3 shafts = 10 knots

Mulkae 71 is former US Navy utility landing craft. Built in 1943 as LCT(6) 531. Transferred to South Korea in December 1960. Other three may have been built in South Korea to same design.

SERVICE FORCES

1 Ex-US "ACHELOUS" CLASS (LIGHT REPAIR SHIP)

Name	*No.*	*Builders*	*Commissioned*
DUK SU (ex-USS *Minotaur*, ARL 15, ex-*LST 645*)	11	Chicago Bridge & Iron Co, Seneca, Illinois	30 Sep 1944

Displacement, tons: 2 366 standard; 3 640 full load
Dimensions, feet (metres): 328 × 50 × 14 (screws) *(100 × 15·2 × 4·3)*
Guns: 2—40 mm; 6—20 mm
Main engines: Diesels (General Motors); 1 700 bhp; 2 shafts = 11·6 knots
Complement: Approx 250

Former US Navy landing craft repair ship. Converted during construction from an LST. Launched on 20 September 1944, transferred to South Korea in October 1955 on loan and purchased 31 January 1977.

DUK SU (old number)

4 Ex-US ARMY FS TYPE (SUPPLY SHIPS)

Name	*No.*	*Builders*
CHEMUL PO (ex-*In Chon*, ex-US Army *FS 198*)	— (ex-*AKL 902*)	Higgins Industries
KU SAN (ex-USS *Sharps*, *AKL 10*, ex-*AG 139*, ex-US Army *FS 385*)	61	Ingalls, Decatur, Alabama
MA SAN (ex-USS *AKL 35*, ex-US Army *FS 383*)	62	Ingalls, Decatur, Alabama
UL SAN (ex-USS *Brule*, *AKL 28*, ex-US Army *FS 370*)	63	Sturgeon Bay

Displacement, tons: approx 700
Dimensions, feet (metres): 176·5 × 32·8 × 10 *(53·8 × 10 × 3·1)*
Guns: 2—20 mm (single) in most ships
Main engine: Diesel; 1 000 bhp; 1 shaft = 10 knots
Complement: Approx 20

Originally US Army freight and supply ships built in World War II for coastal operation. *Chemul Po* transferred to South Korea in 1951; *Ku San*, and *Ma San* in 1956; *Ul San* on 1 November 1971.

KU SAN (old number) *1957*

1 Ex-NORWEGIAN TANKER

Name	*No.*	*Builders*	*Launched*
CHUN JI (ex-*Birk*)	51	A/S Berken Mek Verks, Bergen	1951

Displacement, tons: 1 400 standard; 4 160 full load
Dimensions, feet (metres): 319·8 × 47·9 × 19·3 *(97·5 × 14·6 × 5·9)*
Guns: 1—40 mm; 2—20 mm
Main engines: 2 diesels; 1 800 bhp; 1 shaft = 12 knots
Complement: Approx 70

Transferred to South Korea in September 1953.

CHUN JI *1969*

1 Ex-US 235-ft YO TYPE (HARBOUR TANKER)

Name	*No.*
HWA CHON (ex-*Paek Yeon* AO 5, ex-USS *Derrick* YO 59)	52 (ex-*AO 5*)

Displacement, tons: 890 standard; 2 700 full load
Dimensions, feet (metres): 235 × 37 × 15 *(71·6 × 11·3 × 4·6)*
Guns: Several 20 mm
Main engine: Diesel (Fairbanks-Morse); 1 150 bhp; 1 shaft = 10·5 knots
Complement: Approx 45

Former US Navy self-propelled fuel barge. Transferred to South Korea on 14 October 1955. Capacity 10 000 barrels petroleum. The ship has been laid up in reserve since 1974, although purchased on 2 July 1975.

HWA CHON (old number) *1969*

2 Ex-US 174-ft YO TYPE (HARBOUR TANKERS)

KU YONG (ex-USS *YO 118*) YO 1 — (ex-USS *YO 179*) YO 6

Displacement, tons: 1 400 full load
Dimensions, feet (metres): 174 × 32 × — *(53 × 9·8 × —)*
Guns: Several 20 mm
Main engine: Diesel (Union); 500 bhp; 1 shaft = 7 knots
Complement: Approx 35

Former US Navy self-propelled fuel barges. Transferred to South Korea on 3 December 1946 and 13 September 1971, respectively. Cargo capacity 6 570 barrels.

2 Ex-US "DIVER" CLASS (SALVAGE SHIPS)

Name	*No.*	*Builders*	*Launched*
GUMI (ex-USS *Deliver*, ARS 23)	ARS 26	Basalt Rock Co, Napa, Calif.	18 July 1944
CHANG WON (ex-USS *Grasp*, ARS 24)	ARS 51	Basalt Rock Co, Napa, Calif.	22 Aug 1944

Displacement, tons: 1 530 standard; 1 970 full load
Dimensions, feet (metres): 213·5 × 41 × 13 *(65·1 × 12·5 × 4)*
Guns: 2—20 mm
Main engines: Diesel-electric; 2 440 shp; 2 shafts = 14·8 knots
Complement: 96

Gumi purchased 15 August 1979 and *Chang Won* on 31 March 1978.

2 Ex-US "SOTOYOMO" CLASS (TUGS)

Name	*No.*	*Builders*	*Launched*
YONG MUN (ex-USS *Keosanqua*, ATA 198)	31 (ex-*ATA 2*)	Levingston S.B. Co, Orange, Texas	17 Jan 1945
DO BONG (ex-USS *Pinola*, ATA 206)	32 (ex-*ATA (S) 3*)	Gulfport Boiler & Welding Works, Port Arthur, Texas	14 Dec 1944

Displacement, tons: 534 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Guns: 1—3 in *(76 mm)*/50; 4—20 mm
Main engine: Diesel-electric (General Motors); 1 500 bhp; 1 shaft = 13 knots
Complement: 45

Former US Navy auxiliary ocean tugs. Both transferred to South Korea in February 1962. *Do Bong* modified for salvage work.

The South Korean Navy also operates nine small harbour tugs (designated YTLs). These include one ex-US Navy craft (YTL 550) and five ex-US Army craft.

1 MISCELLANEOUS

Name	*No.*	*Builders*	*Commissioned*
MOK PO (ex-USCG *Trilliam*, WAK 170, ex-US Army *FS 397*)	—	Ingalls, Decatur, Alabama	1944

Details as for Ex-US Army FS type.
Transferred in 1956. Became AG in 1979.

SERVICE CRAFT

The South Korean Navy operates approximately 35 small service craft in addition to the YO-type tankers listed above and the harbour tugs noted above. These craft include open lighters, floating cranes, diving tenders, dredgers, ferries, non-self-propelled fuel barges, pontoon barges, and sludge removal barges. Most are former US Navy craft.

HYDROGRAPHIC SERVICE

The following craft are operated by the South Korean Hydrographic Service which is responsible to the Ministry of Transport.

2 Ex-BELGIAN MSI TYPE

SURO 5 (ex-Belgian *Temse*, ex-US *MSI 470*)
SURO 6 (ex-Belgian *Tournai*, ex-US *MSI 481*)

Displacement, tons: 190 full load
Dimensions, feet (metres): 113·2 × 22·3 × 6 *(34·5 × 6·8 × 1·8)*
Main engines: 2 diesels; 1 260 bhp; 2 shafts = 15 knots
Range, miles: 2 300 at 10 knots
Complement: 16 (6); 18 (5)

Former Belgian inshore minesweepers. Built in Belgium at Mercantile Marine Yard, Kruibeke. *Tournai* being financed by USA. Launched on 6 August 1956 and 18 May 1957, respectively. Transferred to South Korea in March 1970.

1 Ex-US "YMS 1" CLASS

SURO 3 (ex-USCGS *Hodgson*)

Displacement, tons: 264 full load
Dimensions, feet (metres): 136 × 24·5 × 9·3 *(41·4 × 7·5 × 2·8)*
Main engines: Diesels; 1 000 bhp; 2 shafts = 15 knots
Complement: 31

YMS type transferred to South Korea from US Coast & Geodetic Survey in 1968. Launched in 1943.

SURO 2

Of 145 tons launched in 1942. Complement 12.

SURO 7 **SURO 8**

Of 30 tons with complement of six.

COAST GUARD

The South Korean Coast Guard operates about 25 small ships and craft including several tugs and rescue craft.

KUWAIT

Ministerial

Minister of Defence:
Sa'd al Abdallah al-Sabah

Personnel

(a) 1981: 500 (Coast Guard) Administered by Ministry of the Interior
(b) Voluntary service

Future Plans

A contract was awarded to a Japanese firm in mid-1977 for the construction of a base. This will be necessary with the planned expansion of this force.

Mercantile Marine

Lloyd's Register of Shipping:
266 vessels of 2 529 491 tons gross

LIGHT FORCES

0 + 8 "TNC 45" TYPE (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 255
Dimensions, feet (metres): 147·3 × 23 × 7·5 *(44·9 × 7 × 2·3)*
Missiles: SSM; 4—Otomat
Guns: 1—76 mm OTO Melara; 2—40 mm Breda (twin)
Main engines: 2 MTU diesels; 7 200 hp
Range, miles: 1 800 at 16
Complement: 55

Ordered from Lürssen, Vegesack in 1980.

10 THORNYCROFT TYPE (COASTAL PATROL CRAFT)

AL SALEMI	**AMAN**	**MASHHOOR**	**MURSHED**
AL SHURTI	**INTISAR**	**MAYMOON**	**WATHAH**
AL MUBARAKI	**MARZOOK**		

Displacement, tons: 40
Dimensions, feet (metres): 78 × 15·5 × 4·5 *(23·8 × 4·7 × 1·4)*
Gun: 1 MG
Main engines: 2 Rolls-Royce V8 marine diesels; 1 340 shp at 1 800 rpm; 1 116 shp at 1 700 rpm = 20 knots
Range, miles: 700 at 15 knots
Complement: 12 (5 officers, 7 men)

INTISAR *1972, Vosper Thornycroft*

Two were built by Thornycroft before the merger and eight by Vosper Thornycroft afterwards. *Al Salemi* and *Al Mubaraki* were shipped to Kuwait on 8 September 1966 and the last pair *Al Shurti* and *Intisar* in 1972.
Hulls are of welded steel construction, with superstructures of aluminium alloy. Twin hydraulically operated rudders. Decca type D 202 radar. The later boats are slightly different in appearance with modified superstructure and no funnel, see photograph of *Intisar*.

5 VOSPER THORNYCROFT 56 ft TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
DASTOOR	—	Vosper Thornycroft Private Ltd, Singapore	June 1974
KASAR	—	Vosper Thornycroft Private Ltd, Singapore	June 1974
QAHIR	—	Vosper Private Ltd, Singapore	1979
SAGAR	—	Vosper Private Ltd, Singapore	1979
SALAM	—	Vosper Private Ltd, Singapore	1979

Displacement, tons: 25
Dimensions, feet (metres): 56 × 16 × 7·5 *(17·1 × 4·9 × 2·3)*
Guns: 2 MGs
Main engines: 2 MTU MB6 V 331 diesels; 1 350 hp = 26 knots (30 knots in later boats)
Range, miles: 320 at 20 knots
Complement: 8 (2 officers, 6 men)

First two ordered September 1973. Both laid down 31 October 1973. Steel hulls and aluminium superstructure. Three more ordered in 1978.

QAHIR *1979, Vosper Private Ltd*

7 THORNYCROFT 50 ft TYPE (COASTAL PATROL CRAFT)

Built by the Singapore Yard of Thornycroft (Malaysia) Limited, now the Tanjong Rhu, Singapore Yard of Vosper Thornycroft Private Ltd.

1 VOSPER THORNYCROFT TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MAHROOS	—	Vosper Thornycroft Private Ltd, Singapore	Jan 1976

Displacement, tons: 21·5
Dimensions, feet (metres): 46·3 × 14·7 × 7·1 *(14·1 × 4·5 × 2·2)*
Main engines: 2 Rolls-Royce C8M-410 diesels; 780 hp = 21·7 knots
Complement: 5

Ordered in October 1974. Delivered 1975. Hull is of welded steel construction with aluminium superstructure.

MAHROOS (guns not fitted) *1975, Singapore Hilton*

14 VOSPER THORNYCROFT TYPE (COASTAL PATROL CRAFT)

ANTAR	**WARBAH**	**QARUH**	
ISTIQLAL II	**AL SALMI II**	**AL SEBBAH**	+8

Displacement, tons: 6·5
Dimensions, feet (metres): 36·4 × 10·8 × 5·2 *(11·1 × 3·3 × 1·6)*
Main engines: 2 turbocharged Perkins diesels; 420 hp = 27 knots
Complement: 4

First ordered July 1972 from Vosper Thornycroft Private Ltd, Singapore. Built of double-skinned teak with Cascover sheathing. First four delivered late 1972, second four in May 1973, three more in 1976 and last three on 2 December 1977. Last six (named) built by Vosper Private Ltd, Singapore.

AL SALMI II *1979, Vosper Private Ltd*

7 MAGNUM SEDAN (COASTAL PATROL CRAFT)

Dimensions, feet (metres): 27·3 × 7·9 × 2·4 *(8·3 × 2·4 × 0·7)*
Main engines: Twin Mercruiser; 660 hp = 60 knots
Range, miles: 200

First three delivered 1977, one in 1978 and three in 1979 by Magnum Marine, USA.

MAGNUM SEDAN *1978, Magnum Marine*

3 VOSPER TYPE (COASTAL PATROL CRAFT)

Of 39·4 ft *(12 m)* completed in 1978.

LANDING CRAFT

3 LOGISTIC SUPPORT SHIPS

Name	*No.*	*Builders*	*Commissioned*
HADIYA	—	Vosper Private Ltd, Singapore	1979
CERIFF	—	Vosper Private Ltd, Singapore	1979
AL JAHRA	—	Vosper Private Ltd, Singapore	1979

Displacement, tons: 320
Dimensions, feet (metres): 106·4 × 24·6 × 8·2 *(32·3 × 7·5 × 2·5)*
Speed, knots: 9·5

AL JAHRA *1979, Vosper Private Ltd*

3 VOSPER THORNYCROFT TYPE

Name	*No.*	*Builders*	*Commissioned*
WAHEED	—	Vosper Thornycroft Private Ltd, Singapore	May 1971
FAREED	—	Vosper Thornycroft Private Ltd, Singapore	May 1971
REGGA	—	Vosper Thornycroft Private Ltd, Singapore	Nov 1975

Displacement, tons: 170
Dimensions, feet (metres): 88 × 22·6 × 4·3 *(27 × 6·9 × 1·3)*
Main engines: 2 Rolls-Royce C8M-410 diesels; 752 bhp = 10 knots
Range, miles: 1 500 at 9 knots
Complement: 9 (can carry 8 passengers)

First pair ordered in 1970 and third in October 1974 by Kuwait Ministry of the Interior. Can carry 6 400 gallons oil-fuel, 9 400 gallons water and 40 tons deck cargo, the last being handled by a 2·5 ton derrick. Used to support landing-parties working on Kuwait's off-shore islands.

WAHEED *1974, Vosper Thornycroft*

LAOS

The situation in this force is very uncertain.

Ministerial

Minister of National Defence:
Khamtai Siphandon

Personnel

(a) 1979: 550 officers and men approx
(b) 18 months' national service

RIVER PATROL CRAFT

7	LCM (6) Type	28 tons	4 in commission, 3 in reserve
6	Cabin Type	21 tons	2 in commission, 4 in reserve
2	Chris Craft Type	15 tons	2 in commission
12	11 metre Type	10 tons	5 in commission, 7 in reserve
8	8 metre Type	6 tons	8 in reserve
7	Cargo Transport	50 tons	1 in commission, 6 in reserve

LEBANON

Senior Officer

Naval Commander:
Colonel B. E. M. Antoine Kreidi

Personnel

1981: 400 officers and men

Base

Beirut-Jounieh

Mercantile Marine

Lloyd's Register of Shipping:
203 vessels of 267 787 tons gross

DELETION

1975 Djounieh (ex-Fairmile B. ML)

LIGHT FORCES

Note: Reports of order for two "Tracker Mark 2" from Fairey Allday, UK, for Customs service.

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
TARABLOUS	31	Ch. Navals de l'Estérel	1959

Displacement, tons: 90
Dimensions, feet (metres): 124·7 × 18 × 5·8 *(38 × 5·6 × 1·8)*
Guns: 2—40 mm; 2—12·7 mm
Main engines: 2 MTU diesels, 2 shafts; 2 700 bhp = 27 knots
Range, miles: 1 500 at 15 knots
Complement: 19 (3 officers, 16 men)

Laid down in June 1958. Launched in June 1959.

TARABLOUS *1975, Chantiers Navals de l'Esterel*

3 "BYBLOS" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BYBLOS	11	France	1955
SIDON	12	France	1955
BEYROUTH (ex-*Tir*)	13	France	1955

Displacement, tons: 28 standard
Dimensions, feet (metres): 66 × 13·5 × 4 *(20·1 × 4·1 × 1·2)*
Guns: 1—20 mm; 2 MGs
Main engines: General Motors diesels; 2 shafts; 530 bhp = 18·5 knots

French built ML type craft. Launched in 1954-55.

6 "AZTEC" CLASS (COASTAL PATROL CRAFT)

Of 9 metres supplied by Crestitalia in 1979.

"AZTEC" Class

LANDING CRAFT

1 Ex-US "LCU 1466" CLASS

SOUR (ex-*LCU 1474*)

Displacement, tons: 180 standard; 360 full load
Dimensions, feet (metres): 119 × 34 × 6 *(36·3 × 10·4 × 1·8)*
Guns: 2—20 mm
Main engines: 3 diesels; 3 shafts; 675 bhp = 10 knots

Built in 1957, transferred in November 1958.

LIBERIA

Command

This Coast Guard force is controlled by a Coast Guard Commandant who is responsible to the Minister of National Defence.

Commandant LNCG:
Commander W. Kelly Garnett
Deputy Commandant LNCG:
Lieutenant-Commander S. Weaka Peters

Presidential Yacht

1976 *Liberian*

Personnel

(a) 1981: 225 officers and men
(b) Voluntary service

Base

Elijah Johnson CG Base, Monrovia

Patrol Craft

1976 *ML 4001, ML 4002* (40 ft USCG)

Mercantile Marine

Lloyd's Register of Shipping:
2 401 vessels of 80 251 176 tons gross

DELETIONS

LIGHT FORCES

1 US "PGM 71" CLASS

Name	*No.*	*Builders*	*Commissioned*
ALERT (ex-US *PGM 102*)	102	Peterson Ltd, Sturgeon Bay, USA	2 Dec 1966

Displacement, tons: 145·5 full load
Dimensions, feet (metres): 101·5 × 21 × 5 *(30·9 × 6·4 × 1·5)*
Guns: 1—40 mm; 5—5 MGs
Main engines: 8 General Motors 6-71 diesels; 2 shafts; 2 200 bhp = 21 knots
Range, miles: 1 500 at 10 knots
Complement: 15 (2 officers, 13 ratings)

PGM 102 (US number) was built in the USA for transfer under the Military Aid Programme. Similar to *Beteigeuse* in the Dominican Republic.

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
CAVILLA	—	Swiftships Inc, Louisiana, USA	22 July 1976
MANO	—	Swiftships Inc, Louisiana, USA	22 July 1976

Displacement, tons: 38 full load
Dimensions, feet (metres): 65 × 19 × 2·6 *(19·8 × 5·8 × 0·8)*
Guns: 2—M60 MGs (bridge); 1—81 mm mortar; 1—5 MG
Main engines: 2 V12-71 turbocharged diesels; 2 shafts; 1 920 shp = 24 knots
Range, miles: 600 at 21·5 knots
Complement: 20 (2 officers, 18 ratings)

Similar to US Sewart 65 ft type in use in many other navies. Aluminium hulls.

MANO *1976*

3 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
MASTER SERGEANT SAMUEL K. DOE	CG 8801	Karlskrona Varvet	Aug 1980
ALBERT PORTE	CG 8802	Karlskrona Varvet	Aug 1980
GENERAL THOMAS QUIWOUKIA	CG 8803	Karlskrona Varvet	Aug 1980

Displacement, tons: 50
Dimensions, feet (metres): 87·6 × 17·1 × 3·6 *(26·7 × 5·2 × 1·1)*
Main engines: 2 MTU diesels; 1 860 hp; 2 shafts = 25 knots
Range, miles: 1 000
Complement: 8

Aluminium alloy hull.

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
ST. PAUL	—	Swiftships Inc, Louisiana, USA	22 July 1976

Displacement, tons: 11
Dimensions, feet (metres): 42 × 12 × 1·5 *(12·8 × 3·7 × 0·5)*
Guns: 2—M60 MGs (bridge)
Main engines: 2—V8-71 turbocharged diesels; 870 bhp = 20 knots
Complement: 4

LIBYA

Establishment

The Libyan Navy was established in November 1962 when a British Naval Mission was formed and first recruits were trained at HMS *St. Angelo,* Malta. Cadets were also trained at the Britannia Royal Navy College, Dartmouth, and technical ratings at HMS *Sultan,* Gosport, and HMS *Collingwood,* Fareham, England.

Headquarters' Appointment

Senior Officer, Libyan Navy:
Commander A. Shaksuki

Mining Capability

Although few of the listed Libyan ships are credited with a mining capability the fact that, in June 1973, two minefields were laid off Tripoli harbour, some eight miles out suggests that a stock of mines is available.

Personnel

(a) 1981: Total 3 000 officers and ratings, including Coast Guard
(b) Voluntary service

Bases

Tripoli. Operating Ports at Benghazi, Darna, Tobruk.
New bases are either under construction or on order in several localities. The main centre will probably be to the south of Benghazi.

Future Programmes

Libya is obtaining naval supplies from both West and East. The final result is a large and up-to-date fleet at a crucial position in the Mediterranean. The training task to man this fleet must be formidable.

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines	4	2
Frigate	1	—
LSD	1	—
LSTs	2	—
LCTs	5	2 (5)
Corvettes	5	—
Minesweepers—Ocean	2	—
Fast Attack Craft—Missile	19	6
Large Patrol Craft	8	—
Coastal Patrol Craft	1	—
MRC	1	—
Tugs	5	—
Diving Ship	1	—
Transport	1	—

Mercantile Marine

Lloyd's Register of Shipping:
96 vessels of 889 908 tons gross

DELETIONS

Light Forces

1979 *Akrama* and *Arrakib* to Malta

Amphibious Forces

1978 *Ibn Qis* by fire 14 September)

SUBMARINES

Note: Two 25 ft "Mala" class miniature submarines reported ordered from Yugoslavia. At the same time it has been reported that Libya transferred two Cosmos SX404 miniature submarines to the PLO in 1979.

4 + 2 Ex-SOVIET "FOXTROT" CLASS

AL BADR 312 **AL FATEH**
AL AHAD

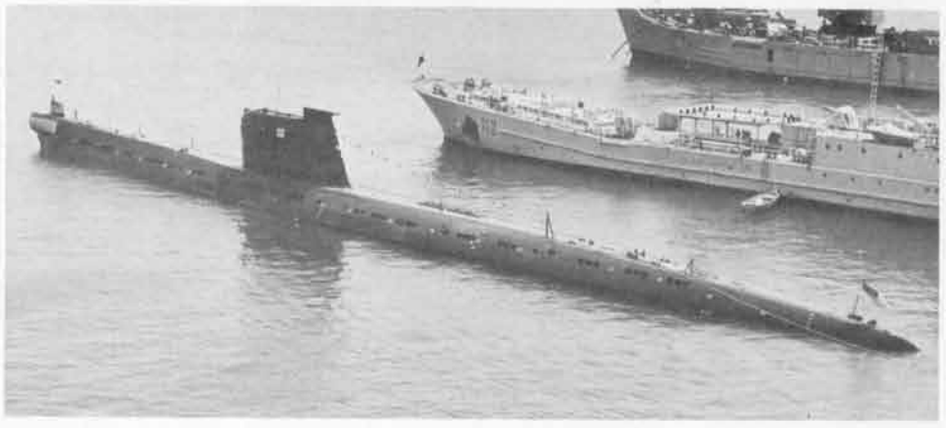
Displacement, tons: 1 950 surfaced; 2 400 dived
Dimensions, feet (metres): 300·1 × 24·6 × 20 *(91·5 × 7·5 × 6·1)*
Torpedo tubes: 10—21 in (6 bow, 4 stern) 22 torpedoes
Main machinery: 3 diesels; 3 shafts; 6 000 bhp; 3 electric motors; 6 000 hp
Speed, knots: 18 surfaced; 16 dived
Range, miles: 20 000 surfaced
Complement: 70

Coming from a re-activated building line in Leningrad, *Al Badr* arrived in Tripoli 27 December 1976; the second boat in late 1977, the third in early 1978 and one on 17 March 1981. Two more on order and building while Libyan crews continue training in the USSR and Soviet advisers (up to 12 in each boat) are attached to each submarine.

Radar: Snoop Tray.

Radio: HF masts not fitted.

Sonar: Hercules.



AL BADR

6/1978, Michael D. J. Lennon

FRIGATE

Unconfirmed report of interest in "Descubierta" class to be built by Bazán, Spain.

1 VOSPER THORNYCROFT MARK 7

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DAT ASSAWARI	F 01	Vosper Thornycroft	27 Sep 1968	Sep 1969	1 Feb 1973

Displacement, tons: 1 325 standard; 1 625 full load
Dimensions, feet (metres): 330 × 36 × 11·2 *(100·6 × 11 × 3·4)*
Missiles: SSM: 4—Otomat; SAM: Albatros (4 launchers)
Guns: 1—4·5 in *(114 mm)*/55 (single Mk 8); 2—40 mm/70 (single L/70); 2—35 mm/90 (twin Oerlikon)
A/S weapons: 6 (2 triple) torpedo tubes
Main engines: CODOG arrangement; 2 shafts; with Kamewa cp propellers; 2 Rolls-Royce Olympus gas turbines; 46 400 shp = 37·5 knots; 2 Paxman 16-cyl Ventura diesels; 3 500 bhp = 17 knots economical cruising speed
Range, miles: 5 700 at 17 knots

Mark 7 Frigate ordered from Vosper Thornycroft on 6 February 1968. Generally similar in design to the two Iranian Mark 5s built by this firm, but larger and with different armament. After trials she carried out work-up at Portland, England, reaching Tripoli autumn 1973.

Radar: Air surveillance and fire control radar.

Refit: Due to failure of generators a refit was planned in the UK in 1978. However, possibly because of the length of the passage involved, this refit was transferred to CNR, Italy. This was interrupted by a major explosion on board on 29 October 1980.

DAT ASSAWARI

1973, John G. Callis

LOGISTIC SUPPORT SHIP

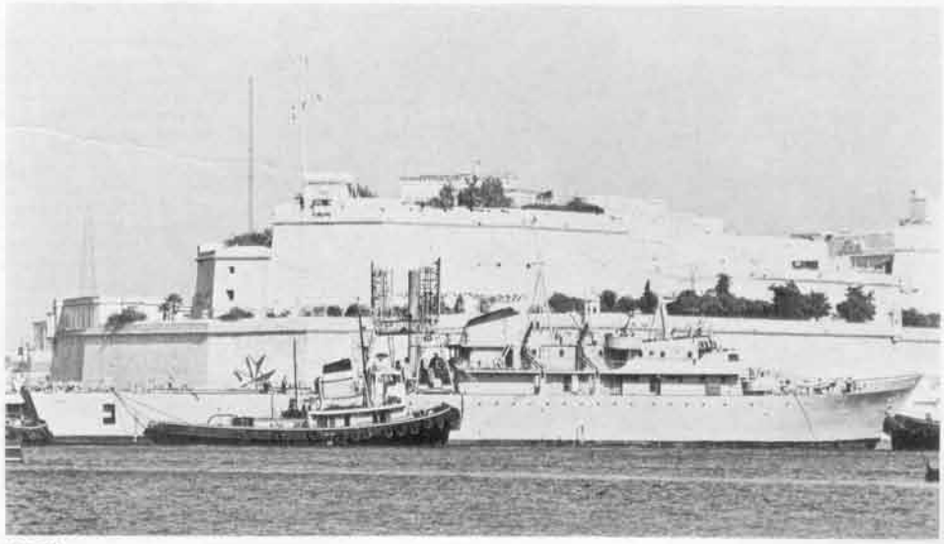
1 LSD TYPE

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ZELTIN	—	Vosper Thornycroft, Woolston	1967	29 Feb 1968	23 Jan 1969

Displacement, tons: 2 200 standard; 2 470 full load
Dimensions, feet (metres): 324 × 48 × 10·2 *(98·8 × 14·6 × 3·1)* 19 *(5·8)* aft when flooded
Dock:
Length, feet (metres): 135 *(41·1)*
Width, feet (metres): 40 *(12·2)*
Guns: 2—40 mm
Main engines: 2 Paxman 16-cyl Ventura diesels; 3 500 bhp; 2 shafts
Speed, knots: 15
Fuel, tons: 350
Range, miles: 3 000 at 14 knots
Complement: As Senior Officer Ship: 101 (15 officers and 86 ratings)

The ship provides full logistic support, including mobile docking maintenance and repair facilities for the Libyan fleet. Craft up to 120 ft can be docked. Used as tender for Light Forces. The Vosper Thornycroft Group received the order for this ship in January 1967.
Fitted with accommodation for a flag officer or a senior officer and staff. Operational and administrative base of the squadron. Workshops with a total area of approximately 4 500 sq ft are situated amidships with ready access to the dock, and there is a 3 ton travelling gantry fitted with outriggers to cover ships berthed alongside up to 200 ft long.

Radar: Thomson-CSF Triton for Vega system.



ZELTIN

1980, L. and L. van Ginderen

CORVETTES

4 MISSILE CORVETTES

Name	*No.*	*Builders*	*Launched*	*Commissioned*
WADI M'RAGH	412	Cantieri del Muggiano, La Spezia	29 Sep 1977	14 Sep 1979
ASSAD EL TOUGOUR	—	Cantieri del Muggiano, La Spezia	20 Apr 1978	Feb 1980
WADI MAGRAWA	—	Cantieri del Muggiano, La Spezia	21 June 1979	June 1980
WADI MARSEAT	—	Cantieri del Muggiano, La Spezia	Dec 1979	Sep 1980

Displacement, tons: 670 full load
Dimensions, feet (metres): 202·4 × 30·5 × 7·2 *(61·7 × 9·3 × 2·2)*
Missiles: SSM; 4—Otomat (single launchers)
Guns: 1—76mm/62 (single Compact); 2—35 mm/90 (twin Oerlikon)
A/S weapons: 6 (2 triple) ILAS torpedo tubes for Whitehead AL44 torpedoes
Mines: Can lay 16 mines
Main engines: 4 MTU MA 16 V956 TB91 diesels; 18 000 hp; 4 shafts = 33 knots
Range, miles: 4 400 at 14 knots
Complement: 58

Ordered in 1974.

Electronics: ECM equipment; ELMER telecommunications system.
Selenia IPN-10 tactical command and control system.

Radar: Air and surface search: Selenia RAN 11 LX.
Navigation: SMA.
Fire control: Elsag NA 10 mod 2 with RTN 10X Orion radar.

Sonar: Diodon from Thomson CSF.

WADI M'RAGH *1979, EPIN*

Name	*No.*	*Builders*	*Commissioned*
TOBRUK	C 01	Vosper Ltd, Portsmouth and Vickers Ltd	20 Apr 1966

Displacement, tons: 440 standard; 500 full load
Dimensions, feet (metres): 177·3 × 28·5 × 13 (screws) *(54 × 8·7 × 4)*
Guns: 1—4 in; 2—40 mm (singles)
Main engines: 2 Paxman Ventura 16 YJCM diesels; 2 shafts; 3 800 bhp = 18 knots
Range, miles: 2 900 at 14 knots
Complement: 63 (5 officers and 58 ratings)

Launched on 29 July 1965, completed on 30 March 1966, commissioned for service at Portsmouth and arrived in Tripoli on 15 June 1966. Fitted with surface warning radar, Vosper roll damping fins and air-conditioning. A suite of State apartments is included in the accommodation.

TOBRUK *1971, A. & J. Pavia*

MINE WARFARE FORCES

2 Ex-SOVIET "NATYA" CLASS (MSO)

Transferred 17 March 1981.

LIGHT FORCES

Note: An order with Turkey for one FAC is reported.

4 + 6 "COMBATTANTE II G" CLASS (FAST ATTACK CRAFT—MISSILE)

BEIR GRASSA	**BEIR GZIR**	**BEIR GTIFA**	
BEIR ALGANDULA	**BEIR KTITAT**	**BEIR GLULUD**	+3
		BEIR ALKRARIM	

Displacement, tons: 311 full load
Dimensions, feet (metres): 160·7 × 23·3 × 7·9 *(49 × 7·1 × 2·4)*
Missiles: SSM; 4 Otomat (single cells)
Guns: 1—76 mm/62 (single Compact); 2—40 mm/70 (twin Breda)
Main engines: 4 MTU diesels; 18 000 bhp; 4 shafts = 39 knots
Range, miles: 1 600 at 15 knots
Complement: 27

Steel hull with alloy superstructure. Ordered from CMN Cherbourg in May 1977. *Beir Grassa* laid down 30 March 1978, launched 28 June 1979, completed 1980. *Beir Gzir* laid down 19 June 1978, launched 22 January 1980, completed 1981. *Beir Gtifa* laid down 30 January 1979, launched 20 May 1980, completed 1981. *Beir Ktitat* laid down 17 December 1979, one more 12 September 1979, *Beir Alkarim* laid down 11 March 1980. All to be delivered by end 1982, although delivery is currently blocked by the French Government.

Radar: Thomson-CSF Triton and Castor radars for Vega system.

"COMBATTANTE II G" Class *1976, CMN Cherbourg*

12 Ex-SOVIET "OSA II" CLASS (FAST ATTACK CRAFT—MISSILE)

952-6 +7

Displacement, tons: 165 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (single cells)
Guns: 4—30 mm (2 twins)
Main engines: 3 diesels; 15 000 bhp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

The first craft arrived in October 1976, two more in early 1977, two more later in 1977 and a sixth in 1978. In November 1975 the Libyan government said that 24 of this class were to be acquired—subsequent reports suggest this may have been reduced to the 12 now held. Further deliveries—two in September 1979, one in October 1979 (956), one in April 1980 (953), one in May 1980 (952) and one in July 1980 (954).

"OSA II" Class *1970*

3 "SUSA" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
SUSA	P 01	Vosper Ltd, Portsmouth	23 Jan 1969
SIRTE	P 02	Vosper Ltd, Portsmouth	23 Jan 1969
SEBHA (ex-*Sokna*)	P 03	Vosper Ltd, Portsmouth	1969

Displacement, tons: 95 standard; 114 full load
Dimensions, feet (metres): 100 × 25·5 × 7 *(30·5 × 7·8 × 2·1)*
Missiles: SSM; 8—SS 12 (M)
Guns: 2—40 mm (single)
Main engines: 3 Bristol Siddeley "Proteus" gas turbines; 3 shafts; 12 750 bhp = 54 knots
Complement: 20

The order for these three fast patrol boats was announced on 12 October 1966. They are generally similar to the "Soloven" class designed and built by Vosper for the Royal Danish Navy. Fitted with air-conditioning and modern radar and radio equipment. *Suza* was launched on 31 August 1967, *Sirte* on 10 January 1968 and *Sokna* (renamed *Sebha*) on 29 February 1968. First operational vessels in the world to be armed with Nord-Aviation SS 12(M) guided weapons with sighting turret installation and other equipment developed jointly by Vosper and Nord. All three overhauled in Italy in 1977.

SEBHA (all now carry pennant numbers) *1969, Wright and Logan*

4 "GARIAN" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
GARIAN	—	Brooke Marine, Lowestoft	30 Aug 1969
KHAWLAN	—	Brooke Marine, Lowestoft	30 Aug 1969
MERAWA	—	Brooke Marine, Lowestoft	early 1970
SABRATHA	—	Brooke Marine, Lowestoft	early 1970

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 106 × 21·2 × 5·5 *(32·3 × 6·5 × 1·7)*
Guns: 1—40 mm; 1—20 mm
Main engines: 2 Paxman 12-cyl Ventura diesels; 2 200 bhp = 24 knots
Range, miles: 1 500 at 12 knots
Complement: 15 to 22

Launched on 21 April, 29 May, 30 September and 25 October, 1969, respectively.

KHAWLAN *1970, Brooke Marine*

4 THORNYCROFT TYPE (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
BENINA	—	Vosper Thornycroft	29 Aug 1968
FARWA	—	John I. Thornycroft, Woolston	4 May 1967
HOMS	—	Vosper Thornycroft	early 1969
MISURATA	—	Vosper Thornycroft	29 Aug 1968

Displacement, tons: 100
Dimensions, feet (metres): 100 × 21 × 5·5 *(30·5 × 6·4 × 1·7)*
Gun: 1—20 mm
Main engines: 3 Rolls-Royce DV8TM diesels; 1 740 bhp = 18 knots
Range, miles: 1 800 at 14 knots
Complement: 18

Welded steel construction. Two transferred to Malta.

FARWA *1969, Thornycroft*

1 THORNYCROFT TYPE (COASTAL PATROL CRAFT)

Dimensions, feet (metres): 78 × 15 × 4·5 *(23·8 × 4·6 × 1·4)*
Gun: 1 MG
Main engines: 3 Rolls-Royce diesels; 3 shafts; 945 bhp = 22·5 knots
Range, miles: 400 at 15 knots

Built by John I. Thornycroft, Singapore in 1962.

AMPHIBIOUS FORCES

2 "PS 700" CLASS (LSTs)

Name	No.	Builders	Commissioned
IBN OUF	132	CNI de la Mediterranée	11 Mar 1977
IBN HARISSA	134	CNI de la Mediterranée	10 Mar 1978

Displacement, tons: 2 800 full load
Dimensions, feet (metres): 326·4 × 51·2 × 7·9 *(99·5 × 15·6 × 2·4)*
Aircraft: Deck for Alouette III
Guns: 6—40 mm/L70 (twin turrets) Breda; 1—81 mm mortar
Main engines: 2 SEMT-Pielstick diesels; 5 340 hp; 2 shafts (cp propellers) = 15·4 knots
Range, miles: 4 000 at 14 knots
Complement: 35

Can carry 240 troops under normal conditions. Have bow doors and ramp for the 11 tanks carried. Helicopter platform.
Ibn Ouf laid down 1 April 1976 and launched 22 October 1976; *Ibn Harissa* laid down 18 April 1977, launched 18 October 1977.

IBN OUF *7/1978, Marius Bar, Toulon*

3 Ex-SOVIET "POLNOCHNIY" CLASS (LCTs)

IBN AL HADRAMI 112 **IBN AL FURAT** 116 **IBN UMAYAA** 118

Displacement, tons: 1 150 full load
Dimensions, feet (metres): 269 × 32·8 × 5·8 *(82 × 10 × 1·8)*
Guns: 4—30 mm; 2 rocket launchers
Main engines: 2 diesels; 5 000 hp = 20 knots
Complement: 40

The first to be transferred arrived in December 1977. On 14 September 1978 *Ibn Qis* was totally burned out during a landing exercise and must be considered a total loss. *Ibn Al Furat* and *Ibn Umayaa* delivered June 1979.

IBN AL HADRAMI *6/1978, Michael D. J. Lennon*

2 + 2 + (5) TURKISH "C 107" CLASS (LCTs)

Displacement, tons: 600 full load
Dimensions, feet (metres): 183·7 × 37·8 × 4·1 *(56 × 11·6 × 1·3)*
Guns: 2—20 mm
Main engines: Diesels = 8·5 knots
Complement: 15

First pair completed 7 December 1979 (ex-Turkish *C132* and *C133*). Five more reported on order.

TRANSPORT

EL TIMSAH

Displacement, tons: 3 100 full load
Dimensions, feet (metres): 385·4 × 57·4 × 16·1 *(117·5 × 17·5 × 4·9)*
Main engines: 2 diesels; 9 000 hp

Italian ro-ro ship acquired in 1979. Fitted with stabilisers and could be used for minelaying.

DIVING SHIP

1 Ex-SOVIET "YELVA" CLASS

Displacement, tons: 295
Dimensions, feet (metres): 132·8 × 26·2 × 6·6 *(40·5 × 8 × 2)*
Main engines: Diesels = 12·5 knots

Built in early 1970s. Carries two 1·5 ton cranes. Transferred 1977.

Radar: One Spin Trough.

"YELVA" Class *1973*

MAINTENANCE REPAIR CRAFT

ZLEITEN (ex-*MRC 1013*, ex-*LCT*)

Displacement, tons: 657 standard; 900 approx full load
Dimensions, feet (metres): 231·3 × 39 × 5 *(70·5 × 11·9 × 1·5)*
Main engines: 4 Paxman diesels; 2 shafts; 1 840 bhp = 9 knots cruising

Built in 1944-45. Purchased from the UK on 5 September 1966. Now a hulk.

TUGS

1 COASTAL TYPE

Of 150 tons gross. Built by Jonker and Stans BV Shipyard, Netherlands.
Launched 16 October 1979.

4 COASTAL TYPE

Name	*No.*	*Builders*	*Commissioned*
RAS EL-HELAL	—	Mondego, Portugal	22 Oct 1976
AL SHWEIRIF	—	Mondego, Portugal	17 Feb 1977
AL KERIAT	—	Mondego, Portugal	1 July 1977
AL TABKAH	—	Mondego, Portugal	29 July 1978

Measurement, tons: 200 gross
Dimensions, feet (metres): 114 × 29·5 × 13 *(34·8 × 9 × 4)*
Main engines: 2 diesels, 2 300 hp = 14 knots

Laid down—*Ras El-Helal*, 5 February 1976; *Al Shweirif*, 23 March 1976; *Al Keriat*, 23 March 1976.

MADAGASCAR

Ministerial

Minister of Defence:
Lieutenant-Colonel Mampila Jaona

Personnel

(a) 1981: 600 officers and men (including Marine Company)
(b) 18 months' national service

Bases and Ports

Diego Suarez, Tamatave, Majunga, Tulear, Nossi-Be, Fort Dauphin, Manakara.

Mercantile Marine

Lloyd's Register of Shipping:
56 vessels of 91 211 tons gross

DELETION

1976 *Jasmine* (Tender)

LIGHT FORCES

1 TYPE 48 (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MALAIKA	—	Chantiers Navals Franco-Belges (SFCN)	Dec 1967

Displacement, tons: 235 light
Dimensions, feet (metres): 155·8 × 23·6 × 8·2 *(47·5 × 7·1 × 2·5)*
Guns: 2—40 mm
Main engines: 2 MGO diesels; 2 shafts; 2 400 bhp = 18·5 knots
Range, miles: 2 000 at 15 knots
Complement: 25

Ordered by the French Navy for delivery to Madagascar. Laid down in November 1966, launched on 22 March 1967.

5 PATROL BOATS

Name	*No.*	*Builders*	*Commissioned*
PHILIBERI ISIRANANA	GC 1	Bayerische Schiffbau, W. Germany	1962
FAHELEOVATENA	GC 2	Bayerische Schiffbau, W. Germany	1962
—	GC 3	Bayerische Schiffbau, W. Germany	1962
FANROSOANA	GC 4	Bayerische Schiffbau, W. Germany	1962
FAHA FAHANA	GC 5	Bayerische Schiffbau, W. Germany	1962

Displacement, tons: 46
Length, feet (metres): 78·7 *(24)*
Gun: 1—40 mm
Main engines: 2 diesels = 22 knots

Used by the Maritime Police.

AMPHIBIOUS FORCES

1 "BATRAM" CLASS

Name	*No.*	*Builders*	*Commissioned*
TOKY	—	Arsenal de Diego Suarez	Oct 1974

Displacement, tons: 810
Dimensions, feet (metres): 217·8 × 41 × 6·2 *(66·4 × 12·5 × 1·9)*
Missiles: SSM; 8—SS 12
Guns: 2—40 mm
Main engines: 2 MGO diesels; 2 400 hp; 2 shafts = 13 knots
Range, miles: 3 000 at 12 knots
Complement: 27

Can carry 250 tons stores and 30 passengers or 120 troops over short distances. Paid for by the French Government as military assistance.
Fitted with a bow ramp and similar to, though larger, than the French EDIC but smaller than Batral.

2 Ex-NORTH KOREAN "NAMPO" CLASS

Displacement, tons: 82
Dimensions, feet (metres): 84·2 × 20 × 6 *(27·7 × 6·1 × 1·8)*
Guns: 6—14·7 mm MGs
Main engines: Diesels; 4 shafts; 4 800 bhp = 40 knots
Range, miles: 375 at 40 knots
Complement: 19

Assault landing craft based on Soviet "P 6" hull with retractable ramp in bow. Transferred February 1979 and June 1979.

3 Ex-US LCMs

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
FANANTENANA (ex-*Richelieu*)	—	A. G. Weser, Bremen, W. Germany	1959

Displacement, tons: 1 040 standard; 1 200 full load
Dimensions, feet (metres): 206·4 × 30 × 14·8 *(62·9 × 9·2 × 4·5)*
Guns: 2—40 mm
Main engines: 2 Deutz diesels; 1 shaft; 1 560 bhp = 12 knots

Trawler purchased and converted in 1966-67 to Coast Guard and training ship. Of 691 tons gross.

MALAWI

1 FAIREY MARINE "SPEAR" CLASS

Dimensions, feet (metres): 29·8 × 9·2 × 2·6 *(9·1 × 2·8 × ·8)*
Guns: 2—7·62 mm MGs
Main engines: 2 Perkins diesels of 290 hp = 25 knots
Complement: 3

Acquired late 1976.

Three other small patrol-boats are deployed on Lake Nyasa (L. Malawi).
The first was bought in 1968.

MALAYSIA

(see also Sabah)

Administration

Minister of Defence:
Datuk Amar Haji Abdul Taib Mahmud

Headquarters' Appointments

Chief of the Naval Staff:
Rear-Admiral Datuk Mohd. Zain bin Mohd. Salleh, DPMJ, KMN
Deputy Chief of the Naval Staff:
Commodore Abdul Wahab bin Haji Nawi, KMN, SMJ

Senior Commands

Commander Naval Area 1:
Commodore P. K. Nettur, KMN
Commander Naval Area 2:
Commodore Aris Fadzillah bin Alang Ahmad

Diplomatic Representation

Services Adviser (Navy) in London:
Major Ahmad Kamal

Personnel

(a) 1981: 6 000 officers and ratings (Reserves about 1 000)
(b) Voluntary service
(c) RMNVR: Total, 800 men and women.
Divisions at Penang and Selangor with plans for new divisions at Perak, Pahang and Sarawak.

Bases

KD *Malaya*, Woodlands Johore Straits (to be replaced by Lumut in 1984).
Lumut (Telok Muroh) (KD *Pelandok*). Under construction for completion in 1984. To be Fleet Operations Command centre, main fleet base, dockyard and training centre.
Kuantan—a new advanced base under construction for completion in 1981.
Labuan (KD *Sri Labuan, Sri Tawau, Sri Rejang*)—construction in hand to resite base on Labuan Island.

Prefix to Ships' Names

The names of Malaysian warships are prefixed by KD, (Kapal Diraja).

Future plans

These include the provision of four 1 500 ton frigates or corvettes, four MCM vessels, six 127 ft patrol craft for Malaysian Customs and six Hong Leong-Lürssen P2 craft for Royal Malaysian Police. More MCMVs may follow later.

Strength of the Fleet

Note: Two ships of undisclosed type and class ordered from West Germany in February 1981. These are possibly sister ships of KD *Sri Indera Sakti*

Type	*Active*	*Building*
Frigates	2	—
Logistic Support Vessel	1	?1
Fast Attack Craft—Missile	8	—
Fast Attack Craft—Gun	6	—
Large Patrol Craft	22	—
Minesweepers—Coastal	5	—
Diving Tender	1	—
Survey Vessel	1	—
LSTs	3	—
Police Launches	51	—
Tugs	3	—

Mercantile Marine

Lloyd's Register of Shipping:
221 vessels of 702 145 tons gross

DELETIONS

Frigate

1977 *Hang Tuah* ("Loch" class) (Reserve)

Light Forces

1976 *Sri Kedah, Sri Pahang*
1977 *Gempita, Handalan, Penderkar, Perkasa*

Mine Warfare Forces

1977 *Jerai* ("Ton" class)

Survey Ship

1979 *Perantau*

PENNANT LIST

Frigates

F 24	Rahmat
F 76	Hang Tuah

Light Forces

P 34	Kris
P 36	Sundang
P 37	Badek
P 38	Renchong
P 39	Tombak
P 40	Lembing
P 41	Serampang
P 42	Panah
P 43	Kerambit
P 44	Beledau
P 45	Kelewang

Light Forces

P 46	Rentaka
P 47	Sri Perlis
P 49	Sri Johor
P 3139	Sri Selangor
P 3140	Sri Perak
P 3142	Sri Kelantan
P 3143	Sri Trengganu
P 3144	Sri Sabah
P 3145	Sri Sarawak
P 3146	Sri Negri Sembilan
P 3147	Sri Melaka
P 3501	Perdana
P 3502	Serang
P 3503	Ganas
P 3504	Ganyang
P 3505	Jerong
P 3506	Todak

Light Forces

P 3507	Paus
P 3508	Yu
P 3509	Baung
P 3510	Pari
P 3511	Handalan
P 3512	Perkasa
P 3513	Pendekar
P 3514	Gempita

Mine Warfare Forces

M 1127	Mahamiru
M 1134	Kinabalu
M 1143	Ledang
M 1163	Tahan
M 1172	Brinchang

Support Forces

A 152	Mutiara
A 1109	Duyong
A 1500	Sri Langkawi
A 1501	Sri Banggi
A 1502	Rajah Jarom
A 1503	Sri Indera Sakti

Police Craft

P 21-32	Coastal Patrol Craft
PX 1-30	Coastal Patrol Craft

FRIGATES

1 YARROW TYPE

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
RAHMAT (ex-*Hang Jebat*)	F 24	Yarrow Shipbuilders & Co Ltd	Feb 1966	18 Dec 1967	Mar 1971

Displacement, tons: 1 250 standard; 1 600 full load
Dimensions, feet (metres): 308 × 34·1 × 14·8 *(93·9 × 10·4 × 4·5)*
Aircraft: Can land helo. on MacGregor hatch on Limbo well
Missiles: SAM: Seacat (one quad launcher)
Guns: 1—4·5 in *(114 mm)*/45 (single); 2—40 mm (singles)
A/S weapon: 1 Limbo 3-barrelled mortar
Main engines: 1 Bristol Siddeley Olympus TMIB gas turbine; 19 500 shp; Crosley Pielstick diesel; 3 850 bhp; 2 shafts; cp propellers
Speed, knots: 26 (gas); 16 (diesel)
Range, miles: 6 000 at 16 knots; 1 000 at 26 knots
Complement: 140

Fully automated with saving in complement. Ordered on 11 February 1966.

Radar: Air surveillance: HSA LW 02.
Fire control: M 20 with radar in spherical radome for guns; M 44 for Seacat.

RAHMAT *1972, Wright and Logan*

1 UK TYPE 41/61

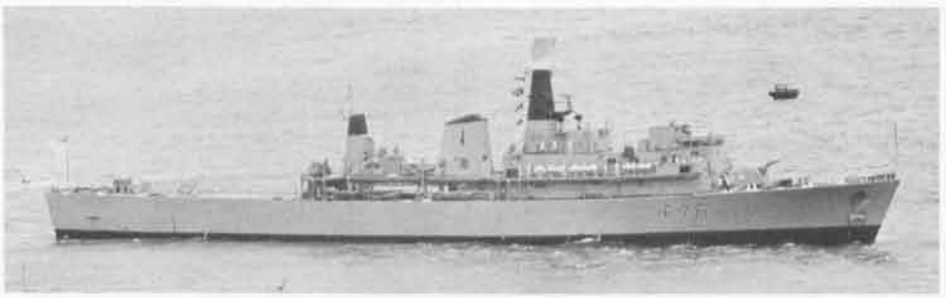
Name	No.	Builders	Laid down	Launched	Commissioned
HANG TUAH (ex-HMS *Mermaid*)	F 76	Yarrow Shipbuilders & Co Ltd	1965	29 Dec 1966	16 May 1973 (see notes)

Displacement, tons: 2 300 standard; 2 520 full load
Dimensions, feet (metres): 339·3 × 40 × 16 (screws) *(103·5 × 12·2 × 4·9)*
Guns: 2—4 in (twin); 2—40 mm (singles)
A/S weapon: 1—3-barrelled Limbo mortar
Main engines: 8 diesels; 14 400 shp; 2 shafts; 2 cp propellers = 24 knots
Oil fuel, tons: 230
Range, miles: 4 800 at 15 knots

Similar in hull and machinery to "Leopard" and "Salisbury" classes. Originally built for Ghana as a display ship for ex-President Nkrumah at a cost of £5m but put up for sale after his departure. She was launched without ceremony on 29 December 1966 and completed in 1968. She was transferred to Portsmouth Dockyard in April 1972 being acquired by the Royal Navy. Refit started October 1972 at Chatham. Commissioned in Royal Navy 16 May 1973. She was based at Singapore 1974-75 returning to the UK early 1976.

Guns: Twin 30 mm Emerlek guns to be fitted.

Radar: Search: AWS 1.



HANG TUAH — *6/1980, Dr. Giorgio Arra*

Sonar: Types 170 and 176.

Transfer: To Malaysia May 1977 as replacement for the previous *Hang Tuah*. She was refitted by Vosper Thornycroft and commissioned on 22 July 1977 sailing for Malaysia in August.

LIGHT FORCES

4 "SPICA-M" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
HANDALAN	P 3511	Karlskrona Varvet, Sweden	Aug 1979
PERKASA	P 3512	Karlskrona Varvet, Sweden	Aug 1979
PENDEKAR	P 3513	Karlskrona Varvet, Sweden	Aug 1979
GEMPITA	P 3514	Karlskrona Varvet, Sweden	Aug 1979

Displacement, tons: 240
Dimensions, feet (metres): 142·6 × 23·3 × 7·4 (screws) *(43·6 × 7·1 × 2·4)*
Missiles: SSM; 4 MM 38 Exocet (single cells)
Guns: 1—57 mm; 1—40 mm
Main engines: 3 MTU diesels; 3 shafts; 10 800 hp = 34·5 knots
Range, miles: 1 850 at 14 knots
Complement: 40 (6 officers, 34 ratings)

Bridge further forward than in Swedish class to accommodate Exocet.
Ordered 15 October 1976. First laid down 24 May 1977, second 27 June 1977, third 15 July 1977, fourth 21 October 1977. All named in one ceremony on 11 November 1978, sailed in August 1979, arriving in Port Klang on 26 October 1979.

Fire control: One 9LV200 Mk 2 weapon control system with J band tracking radar and TV tracking; LME anti-aircraft laser and TV rangefinder.

Radar: Search: One 9GR600.
Navigation: Decca.

HANDALAN — *1979, Karlskrona Varvet*

PERDANA — *1976, A. G. Burgoyne*

6 "JERONG" CLASS (FAST ATTACK CRAFT—GUN)

Name	No.	Builders	Commissioned
JERONG	P 3505	Hong Leong-Lürssen, Butterworth	27 Mar 1976
TODAK	P 3506	Hong Leong-Lürssen, Butterworth	16 June 1976
PAUS	P 3507	Hong Leong-Lürssen, Butterworth	16 Aug 1976
YU	P 3508	Hong Leong-Lürssen, Butterworth	15 Nov 1976
BAUNG	P 3509	Hong Leong-Lürssen, Butterworth	11 Jan 1977
PARI	P 3510	Hong Leong-Lürssen, Butterworth	23 Mar 1977

Displacement, tons: 254 full load
Dimensions, feet (metres): 147·3 × 23 × 8·3 *(44·9 × 7 × 2·5)*
Guns: 1—57 mm Bofors; 1—40 mm
Main engines: 3 Maybach Mercedes-Benz diesels; 9 900 bhp = 32 knots
Range, miles: 2 000 at 15 knots
Complement: 41

Launch dates: *Jerong*, 28 July 1975; *Todak*, 15 March 1976; *Paus*, 3 June 1976; *Yu*, 17 July 1976; *Baung*, 5 October 1976; *Pari*, January 1977.

JERONG — *1976, Royal Malaysian Navy*

4 "PERDANA" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
PERDANA	P 3501	Constructions Mécaniques de Normandie	Dec 1972
SERANG	P 3502	Constructions Mécaniques de Normandie	31 Jan 1973
GANAS	P 3503	Constructions Mécaniques de Normandie	28 Feb 1973
GANYANG	P 3504	Constructions Mécaniques de Normandie	20 Mar 1973

Displacement, tons: 234 standard; 265 full load
Dimensions, feet (metres): 154·2 × 23·1 × 12·8 *(47 × 7 × 3·9)*
Missiles: SSM; 2 MM 38 Exocet (single cells)
Guns: 1—57 mm Bofors; 1—40 mm/70 Bofors
Main engines: 4 MTU diesels; 4 shafts; 14 000 bhp = 36·5 knots
Range, miles: 800 at 25 knots

Perdana launched 31 May 1972 and *Ganas* launched 26 October 1972, *Serang* launched 22 December 1971, and *Ganyang* launched 16 March 1972. All of basic "La Combattante II" design. Left Cherbourg for Malaysia 2 May 1973.

Radar: Thomson-CSF Triton and Pollux radars for Vega system.

4 "KEDAH" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
SRI SELANGOR	P 3139	Vosper Ltd, Portsmouth	25 Mar 1963
SRI PERAK	P 3140	Vosper Ltd, Portsmouth	June 1963
SRI KELANTAN	P 3142	Vosper Ltd, Portsmouth	12 Nov 1963
SRI TRENGGANU	P 3143	Vosper Ltd, Portsmouth	16 Dec 1963

4 "SABAH" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
SRI SABAH	P 3144	Vosper Ltd, Portsmouth	2 Sep 1964
SRI SARAWAK	P 3145	Vosper Ltd, Portsmouth	30 Sep 1964
SRI NEGRI SEMBILAN	P 3146	Vosper Ltd, Portsmouth	28 Sep 1964
SRI MELAKA	P 3147	Vosper Ltd, Portsmouth	2 Nov 1964

14 "KRIS" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
KRIS	P 34	Vosper Ltd, Portsmouth	1 Jan 1966
SUNDANG	P 36	Vosper Ltd, Portsmouth	29 Nov 1966
BADEK	P 37	Vosper Ltd, Portsmouth	15 Dec 1966
RENCHONG	P 38	Vosper Ltd, Portsmouth	17 Jan 1967
TOMBAK	P 39	Vosper Ltd, Portsmouth	2 Mar 1967
LEMBING	P 40	Vosper Ltd, Portsmouth	12 Apr 1967
SERAMPANG	P 41	Vosper Ltd, Portsmouth	19 May 1967
PANAH	P 42	Vosper Ltd, Portsmouth	27 July 1967
KERAMBIT	P 43	Vosper Ltd, Portsmouth	28 July 1967
BELEDAU	P 44	Vosper Ltd, Portsmouth	12 Sep 1967
KELEWANG	P 45	Vosper Ltd, Portsmouth	4 Oct 1967
RENTAKA	P 46	Vosper Ltd, Portsmouth	22 Sep 1967
SRI PERLIS	P 47	Vosper Ltd, Portsmouth	24 Jan 1968
SRI JOHOR	P 49	Vosper Ltd, Portsmouth	14 Feb 1968

Displacement, tons: 96 standard; 109 full load
Dimensions, feet (metres): 103 × 19·8 × 5·5 *(31·4 × 6 × 1·7)*
Guns: 2—40 mm/70
Main engines: 2 Bristol Siddeley/Maybach (MTU) MD 655/18 diesels; 3 500 bhp = 27 knots
Range, miles: 1 400 ("Sabah" class 1 660) at 14 knots
Complement: 22 (3 officers, 19 ratings)

The first six boats, constituting the "Kedah" class were ordered in 1961 for delivery in 1963. The four boats of the "Sabah" class were ordered in 1963 for delivery in 1964. The remaining 14 boats of the "Kris" class were ordered in 1965 for delivery between 1966 and 1968. All are of prefabricated steel construction and are fitted with Decca radar, air-conditioning and Vosper roll damping equipment. The differences between the three classes are minor, the later ones having improved radar, communications, evaporators and engines of Maybach (MTU), as opposed to Bristol Siddeley construction. *Sri Johor,* the last of the 14 boats of the "Kris" class, was launched on 22 June 1967.

SRI SABAH ("Sabah" Class) *1976, A. G. Burgoyne*

AMPHIBIOUS FORCES

Note: Two landing craft, *Melaban* and *Jerijih,* of unknown size and ownership completed in 1978.

3 Ex-US "511-1152" CLASS (LSTs)

SRI LANGKAWI (ex-USS *Hunterdon County, AGP 838* ex-*LST 838*) A 1500
SRI BANGGI (ex-USS *Henry County LST 824*) A 1501
RAJAH JAROM (ex-USS *Sedgewick County LST 1123*) A 1502

Displacement, tons: 1 653 standard; 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 12 *(100 × 15·3 × 3·7)*
Guns: 8—40 mm (2 twin, 4 single)
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Complement: 138 (11 officers, 127 ratings)

Built in 1945. *Sri Langkawi* transferred on loan from the US Navy and commissioned in the Royal Malaysian Navy on 1 July 1971. Sold 1 August 1974. Other two transferred by sale 7 October 1976. Cargo capacity 2 100 tons. Operate as tenders to Light Forces.

SRI LANGKAWI *1976, A. G. Burgoyne*

15 LCPs

LCP 1-15

5 LCMs

LCM 1-5

9 RCPs

RCP 1-9

MINE WARFARE FORCES

Note: Four MCM vessels of "Lerici" class ordered from Italy in February 1981.

5 Ex-BRITISH "TON" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
MAHAMIRU (ex-HMS *Darlaston*)	M 1127	Cook, Welton and Gemmell	1954
KINABALU (ex-HMS *Essington*)	M 1134	Camper and Nicholson	1955
LEDANG (ex-HMS *Hexton*)	M 1143	Cook, Welton and Gemmell	1954
TAHAN (ex-HMS *Lullington*)	M 1163	Harland and Wolff	1956
BRINCHANG (ex-HMS *Thankerton*)	M 1172	Camper and Nicholson	1957

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·3 × 8·5 × 2·5)*
Guns: 1—40 mm (fwd); 2—20 mm (aft)
Main engines: 2 Deltic diesels; 2 shafts; 3 000 bhp = 15 knots
Oil fuel, tons: 45
Range, miles: 2 500 at 12 knots
Complement: 29

Mahamiru transferred from the Royal Navy on May 1960. *Ledang,* refitted at Chatham Dockyard before transfer, commissioned for Malaysia in October 1963. *Jerai* and *Kinabalu,* refitted in Great Britain, arrived in Malaysia summer 1964. *Brinchang* and *Tahan,* refitted in Singapore, transferred to Malaysian Navy in May and April 1966, respectively. All underwent a nine month refit by Vosper Thornycroft, Singapore during 1972-73 which will extend their availability by some years. *Jerai* deleted in 1977; laid up at Woodlands.

KINABALU *8/1980, Ziro Kimata*

LOGISTIC SUPPORT SHIP

Note: See "Strength of the Fleet" note at beginning of section.

Name	*No.*	*Builders*	*Commissioned*
SRI INDERA SAKTI	A 1503	Bremer Vulkan	24 Oct 1980

Measurement, tons: 1 800 deadweight
Dimensions, feet (metres): 328 × 49·2 × 15·7 *(100 × 15 × 4·8)*
Main engines: 2 Deutz diesels; 5 865 hp = 16·5 knots
Complement: Accommodation for 215

Launched 1 July 1980. To be used as a training ship for cadets in addition to her main roles of long range support of Light Forces and MCM vessels, command and communications ship and troop transport.
Fitted with bow-thruster, stabilising system, helicopter deck, vehicle deck, embarkation ramps port and starboard, recompression chamber and a stern anchor. Large operations room and a conference room are provided.

Replenishment: Transfer stations on either beam and aft, light jackstay on both sides and a 15 ton crane.

Stores: Carries 1 300 tons dieso and 200 tons fresh water (plus 48 tons/day distillers).

SRI INDERA SAKTI *10/1980, Werner Globke*

DIVING TENDER

Name	*No.*	*Builders*	*Commissioned*
DUYONG	A 1109	Kall Teck (Pte) Ltd, Singapore	5 Jan 1971

Displacement, tons: 120 standard; 140 full load
Dimensions, feet (metres): 110 × 21 × 5·8 *(33·6 × 6·4 × 1·8)*
Gun: 1—20 mm
Main engines: 2 Cummins diesels; 1 900 rpm; 500 bhp = 10 knots
Complement: 23

Launched on 18 August 1970 as TRV.

DUYONG *1976, A. G. Burgoyne*

SURVEY VESSEL

Name	*No.*	*Builders*	*Commissioned*
MUTIARA	A 152	Hong Leong-Lürssen, Butterworth	12 Jan 1978

Displacement, tons: 1 905
Dimensions, feet (metres): 232·9 × 42·6 × 13·1 *(71 × 13 × 4)*
Guns: 2—20 mm
Main engines: 2 Deutz diesels; 4 000 hp = 16 knots
Range, miles: 4 500 at 16 knots
Complement: 156 (13 officers, 143 ratings)

Ordered in early 1975. Cost $M33 million. Carries satellite navigation, auto-data system and computerised fixing system.

MUTIARA *6/1980, Dr. Giorgio Arra*

TUGS

PENYU (ex-*Salvigilant*)

Of 398 tons gross, built in 1976. Acquired 1980 from Victoria Marine Ltd, Singapore.

SOTONG (ex-*Asiatic Charm*)

Of 233 tons gross, built in 1976. Acquired 1980 from Asiatic Navigation (Private) Ltd, Singapore.

KEPAH (ex-*Asiatic Success*)

Of 203 tons gross, built in 1976 in Japan. Acquired 1980.

TUNDA 1, 2 and 3

Of 150 tons. 85·3 ft with one Cummins diesel. Built by Ironwood (Malaysia). *Tunda 1* laid down 1 March 1977, launched 24 February 1978.

ROYAL MALAYSIAN POLICE

12 "PZ" CLASS

P 21-32

Displacement, tons: 221 full load
Dimensions, feet (metres): 126·3 × 22·9 × 5·9 *(38·5 × 7 × 1·8)*
Guns: 1—40 mm; 1—20 mm; 2—7·62 mm MGs
Main engines: 2 MTU 20V 538 TB92 diesels; 2 shafts = 31 knots
Range, miles: 1 200 at 24 knots

Ordered from Hong Leong-Lürssen, Butterworth, Malaysia in 1979—first delivered August 1980. Class completed late 1981. Accommodation for 38.

9 "29 METRE" CLASS

Ordered 1979 from Penang Shipbuilding Co. Two Paxman Valenta diesels of 4 000 hp each. First delivery October 1980.

18 "PX" CLASS

MAHKOTA PX 1	**BENTARA** PX 7	**PEKAN** PX 13
TEMENGGONG PX 2	**PERWIRA** PX 8	**KELANG** PX 14
HULUBALANG PX 3	**PERTANDA** PX 9	**KUALA KANGSAR** PX 15
MAHARAJASETIA PX 4	**SHAHBANDAR** PX 10	**ARAU** PX 16
MAHARAJALELA PX 5	**SANGSETIA** PX 11	**SRI GUMANTONG** PX 17
PAHLAWAN PX 6	**LAKSAMANA** PX 12	**SRI LABUAN** PX 18

Displacement, tons: 85
Dimensions, feet (metres): 87·5 × 19 × 4·8 *(26·7 × 5·8 × 1·5)*
Guns: 2—20 mm
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 shafts; 2 700 hp = 25 knots
Range, miles: 700 at 15 knots
Complement: 15

6 "IMPROVED PX" CLASS

ALOR STAR PX 19	**KUALA TRENGGANU** PX 21	**SRI MENANTI** PX 23
KOTA BAHRU PX 20	**JOHORE BAHRU** PX 22	**KUCHING** PX 24

Displacement, tons: 92
Length, feet (metres): 91 *(27·8)*
Guns: 2—20 mm
Main engines: 2 (MTU) diesels; 2 460 hp = 25 knots
Range, miles: 750 at 15 knots
Complement: 18

All 24 boats built by Vosper Thornycroft Private, Singapore; PX class between 1963 and 1970, Improved PX class 1972-73. *Sri Gumantong* and *Sri Labuan* operated by Sabah Government, remainder by Royal Malaysian Police.

SRI MENANTI *1972, Yam Photos, Singapore*

6 LÜRSSEN PATROL CRAFT

SRI —	PX 25	**SRI TAWAU**	PX 27	—	PX 29
SRI KUDAT	PX 26	—	PX 28	—	PX 30

Of 62·5 tons and 25 knots with one 20 mm gun. First three completed mid-1973.

MALDIVES

A series of widely separated atolls where fishing has been interrupted by foreign craft and the small communities can be reached only by sea.

Mercantile Marine

Lloyd's Register of Shipping:
41 vessels of 136 037 tons gross.

1 Ex-BRITISH TARGET TOWING LAUNCH

Displacement, tons: 34·6
Dimensions, feet (metres): 68 × 19 × 6 *(20·7 ×5·8 × 1·8)*
Main engines: 2 Rolls-Royce Sea Griffon diesels; 1 100 bhp = 30 knots
Complement: 9

Transferred by RAF after their evacuation of Gan in 1976.

1 Ex-BRITISH PINNACE

Displacement, tons: 28·3
Dimensions, feet (metres): 63 × 15·5 × 5 *(19·2 × 4·9 × 1·5)*
Main engines: 2 Rolls-Royce C6 diesels; 190 bhp = 13 knots
Complement: 5

Five tons cargo capacity. Transferred by RAF in 1976.

4 Ex-BRITISH LANDING CRAFT

64 ft General Purpose craft transferred by RAF in 1976.

3 Ex-TAIWANESE TRAWLERS

Confiscated for illegal fishing. Fitted with one twin 25 mm (Soviet) gun on foc's'le.

1 FAIREY MARINE 45 ft TYPE

Provided for patrol and intercommunication duties in 1975.

MALI

Ministerial

Minister of Defence:
General Moussa Traore (Premier)

Personnel

1981: 50 officers and men

Patrol Craft

A small river patrol service with three craft operating on headwaters of the Niger with bases at Bamako, Segou, Mopti and Timbuktu.

Mercantile Marine

Lloyd's Register of Shipping:
1 vessel of 200 tons gross

MALTA

A coastal patrol force of small craft was formed in 1973. It is manned by the Maltese Regiment and primarily employed as a Coast Guard.

Mercantile Marine

Lloyd's Register of Shipping:
60 vessels of 132 861 tons gross

DELETIONS

1979 C 21, C 28 (old), C 29 (old)
1981 One craft sank in Msida creek after being cut adrift—number not known

COASTAL PATROL CRAFT

2 Ex-US "SWIFT" CLASS

C 23 (ex-US C 6823) **C 24** (ex-US C 6824)

Displacement, tons: 22·5
Dimensions, feet (metres): 50 × 13 × 4·9 *(15·6 × 4 × 1·5)*
Guns: 3—5 Browning M2 MGs; 81 mm mortars
Main engines: 2 General Motors 12V-71N diesels = 25 knots
Endurance: 24 hours
Complement: 6

Built by Sewart Seacraft Ltd in 1967. Bought in February 1971.

C 23 *1977, Michael D. J. Lennon*

2 Ex-LIBYAN CUSTOMS LAUNCHES

C 25 **C 26**

Displacement, tons: 86·2
Dimensions, feet (metres): 103 × 16·1 × 4·9 *(31·4 × 4·9 × 1·5)*
Gun: 1—5 Browning M2 MG
Main engines: 2 Mercedes-Benz MB 820B diesels; 2 shafts; 630 bhp = 21 knots
Complement: 12

First transferred 16 January 1974.

C 26 *1976, Michael D. J. Lennon*

1 Ex-FDR CUSTOMS LAUNCH

C 27 (ex-*Brunsbuttel*)

Displacement, tons: 105
Dimensions, feet (metres): 96·8 × 17·1 × 5·2 *(29·5 × 5·2 × 1·6)*
Gun: 1—5 Browning M2 MG
Main engines: 2 Motoren WerkeTRM 134S diesels
Complement: 9

Built in 1953 by Buschmann, Hamburg.

C 27 *1976, Michael D. J. Lennon*

2 Ex-LIBYAN PATROL CRAFT

C 28 (ex-*Arrakib*) **C 29** (ex-*Akrama*)

Displacement, tons: 100
Dimensions, feet (metres): 100 × 21 × 5·5 *(30·5 × 6·4 × 1·7)*
Gun: 1—20 mm
Main engines: 3 Rolls-Royce DV8 TM diesels; 1 740 bhp = 18 knots
Range, miles: 1 800 at 14 knots
Complement: 15

Built for Libya by Thornycroft, UK in 1967 and 1969. Transferred 1979.

C 29 *1980, L. and L. van Ginderen*

2 Ex-RAF RESCUE/TARGET-TOWING LAUNCHES (RTTL Mk 2)

C 68 (ex-2768) **C 71** (ex-2771)

Displacement, tons: 34·6
Dimensions, feet (metres): 68 × 19 × 6 *(20·7 × 5·8 × 1·8)*
Main engines: 2 Rolls-Royce Sea Griffon; 11 000 bhp = 30 knots
Complement: 9

Built by Saunders-Roe and Groves and Gutteridge.

Construction: Hard chine, wooden hulls.

RTTL Mk 2 Type *1975, RAF*

1 Ex-RAF PINNACE—1300 SERIES

Displacement, tons: 28·3
Dimensions, feet (metres): 63 × 15·5 × 5 *(19·2 × 4·9 × 1·5)*
Main engines: 2 Rolls-Royce C6 diesels; 190 bhp = 13 knots
Complement: 5

1 Ex-RAF RANGE SAFETY LAUNCH

RSL (ex-1600 Series)

Displacement, tons: 12 full load
Dimensions, feet (metres): 43 × 13 × 4 *(13·1 × 4 × 1·2)*
Main engines: 2 Rolls-Royce C6 diesels; 190 bhp = 16 knots
Complement: 4

Construction: Hard chine, wooden double diagonal hulls.

2 PATROL CRAFT

APHRODITE **KIKLAN**

Built by Guy Couacher in 1979. Fitted with two machine guns and Decca 110 radar.

PATROL CRAFT *1/1980, X. I. Taibo*

MAURITANIA

Ministerial

Minister of National Defence:
Lieutenant-Colonel Mohamed Khouna Ould Heydala

Personnel

(a) 1981: 300 officers and men
(b) Voluntary service

Base

Port Etienne

Mercantile Marine

Lloyd's Register of Shipping:
3 vessels of 874 tons gross

CORVETTES

2 Ex-SOVIET "MIRNY" CLASS

Name	*No.*	*Builders*	*Commissioned*
BOULANOUAR	—	Nikolayev	1956
IDINI	—	Nikolayev	1956

Displacement, tons: 847 full load
Dimensions, feet (metres): 208 × 31·2 × 13·8 *(63·4 × 9·5 × 4·2)*
Guns: 2—30 mm; 1 MG
Main engines: Diesel-electric; 4 diesels; 3 100 hp; 1 shaft = 18 knots
Range, miles: 18 700 at 11 knots
Complement: 31

Ex-whale-catchers converted for use as patrol craft and for support of Light Forces. Similar to Soviet AGIs.

"MIRNY" Class *1972*

LIGHT FORCES

3 SPANISH "BARCELO" CLASS

Name	*No.*	*Builders*	*Commissioned*
EL BEIG	—	Bazan-La Carraca	May 1979
EL VAIZ	—	Bazan-La Carraca	Oct 1979
—	—	Bazan-La Carraca	1981

Displacement, tons: 139 full load
Dimensions, feet (metres): 118·7 × 19 × 6·2 *(36·2 × 5·8 × 1·9)*
Guns: 1—40 mm; 2—20 mm
Main engines: 2 MTU MD-16 TB-90 diesels; 5 760 shp = 36 knots
Range, miles: 1 200 at 17 knots
Complement: 19 (3 officers, 16 ratings)

Ordered 21 July 1976. Delivery delayed because of a high speed collision between boats during trials on 28 November 1978. Third laid down April 1979.

Fire control: One CSEE Panda optical director (made in Spain).

"BARCELO" Class *3/1976, E. N. Bazán*

2 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
TICHITT	—	Chantiers Navals de l'Esterel	Apr 1969
DAR EL BARKA	—	Chantiers Navals de l'Esterel	June 1969

Displacement, tons: 75 standard; 80 full load
Dimensions, feet (metres): 105 × 19 × 5·2 *(32 × 5·8 × 1·6)*
Guns: 2—20 mm
Main engines: 2 Mercedes Maybach (MTU) 12V 331 TC81 diesels; 2 shafts; 2 700 bhp = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 17

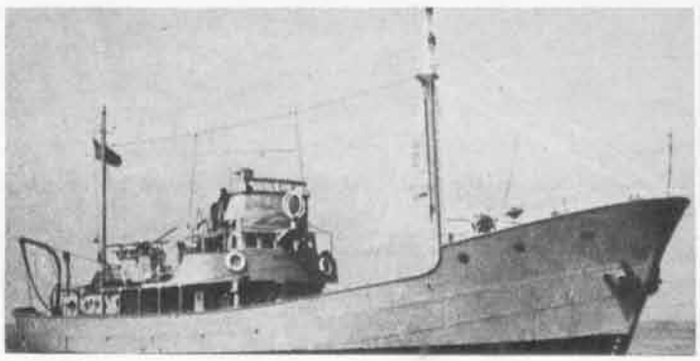
DAR EL BARKA *Chantiers Navals de l'Esterel*

2 Ex-SPANISH LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
— (ex-*Centinela W 33*)	—	Bazan, Ferrol	1953
— (ex-*Serviola W 34*)	—	Bazan, Ferrol	1953

Displacement, tons: 255 standard; 282 full load
Dimensions, feet (metres): 117·5 × 22·5 × 9·8 *(35·8 × 6·9 × 3)*
Guns: 2—37 mm
Main engine: 1 diesel; 430 bhp = 12 knots

Used as fishery protection ships in Spain. Transferred 5 March 1977.



Ex-SERVIOLA *1974, Spanish Navy*

Name	*No.*	*Builders*	*Commissioned*
IM RAQ NI	—	Chantiers Navals de l'Esterel	Nov 1965
SLOUGHI	—	Chantiers Navals de l'Esterel	May 1968

Displacement, tons: 20
Dimensions, feet (metres): 59·7 × 13·5 × 3·8 *(18·2 × 4·1 × 1·2)*
Gun: 1—12·7 mm
Main engines: 2 General Motors 671M diesels; 512 bhp = 22·5 knots
Range, miles: 860 at 12 knots; 400 at 15 knots
Complement: 6

CHINGUETTI

Small patrol craft reaching the end of her life.

MAURITIUS

Ministerial

Minister of National Defence:
Sir Seewoosagur Ramgoolam (Premier)

Mercantile Marine

Lloyd's Register of Shipping:
18 vessels of 37 675 tons gross

1 Ex-INDIAN "ABHAY" CLASS (LARGE PATROL CRAFT)

AMAR

Displacement, tons: 120 standard; 151 full load
Dimensions, feet (metres): 117·2 × 20 × 5 *(35·7 × 6·1 × 1·5)*
Gun: 1—40 mm
Main engines: 2 diesels = 18 knots

Built by Hooghly D & E Co, Calcutta 1961. Transferred April 1974. Retained original name.

AMAR *1976*

MEXICO

Ministerial

Secretary of National Defence:
General Felix Galvan Lopez

Headquarters' Appointments

Secretary of the Navy:
Admiral Ing M. N. Ricardo Chazaro Lara
Under-Secretary of the Navy:
Admiral C. G. Demn. Ruben Montejo Sierra
Commander-in-Chief of the Navy:
Admiral C. G. Demn. Miguel A. Gomez Ortega
Chief of the Naval Staff:
Vice-Admiral C. G. Demn. Hector Elias Robles
Director Naval Air Services:
Vice-Admiral P. A. Demn. Vidal Preciado Ruiz
Director of Services:
Vice-Admiral C. G. Demn. David Zepeda Torres

Diplomatic Representation

Naval Attaché in Brasilia (and Argentina and Uruguay):
Vice-Admiral C. G. Demn. Fernando Magana Verdugo
Naval Attaché in Caracas:
Vice-Admiral C. G. Victor M. Chapa Zamudio
Naval Attaché in Guatemala (and Salvador, Nicaragua, Costa Rica and Panama):
Vice-Admiral I. M. N. Carlos Almeida Zamudio
Naval Attaché in Lima (and Ecuador):
Vice-Admiral P. A. Demn. Fidencio Gonzalez Carrasco
Naval Attaché in London:
Vice-Admiral P. A. Demn. Estanislao Lopez Arreola
Naval Attaché in Madrid:
Vice-Admiral C. G. Demn. Manuel Hernandez Obregon
Naval Attaché in Rome (and Yugoslavia):
Vice-Admiral C. G. Miguel Portela Cruz
Naval Attaché in Tokyo:
Vice-Admiral I. M. N. Enrique Esparza Aguirre
Naval Attaché in Washington:
Vice-Admiral C. G. Demn. Hector Ramirez de Arellano

Personnel

(a) 1981: Total 20 240 officers and men (including Naval Air Force and 3 810 Marines)
(b) Voluntary service

Naval Bases

The Naval Command is split between the Pacific and Gulf areas and each subdivided into Naval Zones and, subsequently, Naval Sectors.

Gulf Command: (odd numbered zones):
Ciudad Madero, Tampico (1st Naval Zone)
Veracruz (3rd Naval Zone)
Frontera, Tabasco (5th Naval Zone)
Ciudad del Carmen, Campeche (7th Naval Zone)
Yucalpetén, Yucatan (9th Naval Zone)
Chetumal, Quintana Roo (11th Naval Zone)

Pacific Command: (even numbered zones):
Ensenada, Baja California Norte (2nd Naval Zone)
La Paz, Baja California Sur (4th Naval Zone)
Guaymas, Sonora (6th Naval Zone)
Mazatlán, Sinaloa (8th Naval Zone)
Manzanillo, Jalisco (10th Naval Zone)
Acapulco, Guerrero (12th Naval Zone)
Salina Cruz, Oaxaca (14th Naval Zone)
Puerto Madero, Chiapas (16th Naval Zone)

Strength of the Fleet

Type	*Active*	*Building*
Destroyers	2	—
Frigates	6	—
Patrol Ships	38	—
Large Patrol Craft	32	—
Survey Vessels	2	—
Coastal and River Patrol Craft	13	—
Transport	1	—
LSTs (1 repair ship)	3	—
Tankers-Harbour	2	—
Tugs	4	—
Floating Docks	4	—
Floating Cranes	7	—

Naval Air Force

Naval air bases at Mexico City, Las Bajadas, Puerto Cortes, Isla Mujeres, Ensenada, La Paz.

15 Hu-16 Albatros
2 Bell B 47C-3B helicopters
2 Bell 47G helicopters
2 Bell HU-1H helicopters
4 Alouette III helicopters
4 DC 3 (Dakota)
2 Beech C45H
2 Fairchild F-27
7 Cessna
4 Cessna 150J
1 Cessna 180-D
1 Cessna 337-G
1 Cessna 402B
2 Baron Beech B-55
6 Bonanza Beech F-33
2 Mentor Beech T-34B
1 Lear Jet 24-D
1 Boeing N25
1 Lycoming

General

One of the persistent problems facing the Mexican Navy is the incursion of foreign fishery poachers, frequently highly organised groups working from the USA. This explains the considerable emphasis which has been put on aircraft and medium sized patrol craft.

Mercantile Marine

Lloyd's Register of Shipping:
361 vessels of 1 006 417 tons gross

DELETIONS

Frigates

1975 *Guanajuato*
1976 *Papaloapan* (ex-US APD)

Light Forces

1979 *AM 1, 2, 3*

Survey Ship

1975 *Virgilio Uribe*

Tugs

1974 *R 4*
1978 *R 1*
1979 *R 5, R 6*

DESTROYERS

2 Ex-US "FLETCHER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CUAUHTEMOC (ex-USS *Harrison*, DD 573)	E 01 (ex-F 1)	Consolidated Steel Corporation	25 July 1941	7 May 1942	25 Jan 1943
CUITLAHUAC (ex-USS *John Rodgers*, DD 574)	E 02 (ex-F 2)	Consolidated Steel Corporation	25 July 1941	7 May 1942	9 Feb 1943

Displacement, tons: 2 100 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18 *(114·8 × 12 × 5·5)*
Guns: 5—5 in *(127 mm)*/38 (single Mk 30); 10—40 mm/60 (twin Mk 2)
Torpedo tubes: 5—21 in *(533 mm)* (quin)
Main engines: 2 geared turbines; 2 shafts; 60 000 shp
Boilers: 4
Speed, knots: 35; 14 economical
Oil fuel, tons: 650
Range, miles: 5 000 at 14 knots
Complement: 197

Former US destroyers of the original "Fletcher" class. Transferred to the Mexican Navy in August 1970. Due for deletion as they come up for refit.

Radar and fire control: Mk 12 radar for Mk 37 director; SC and SG1 radars; one modern commercial radar; five Mk 51 GFCS for 40 mm.

CUAUHTEMOC (old pennant number) *1972, Mexican Navy*

FRIGATES

1 Ex-US "EDSALL" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
COMODORO MANUEL AZUETA (ex-USS *Hurst*, DE 250)	A 06	Brown S.B. Co, Houston, Texas	27 Jan 1943	14 Apr 1943	30 Aug 1943

Displacement, tons: 1 200 standard; 1 850 full load
Dimensions, feet (metres): 302·7 × 36·6 × 13 *(92·3 × 11·3 × 4)*
Guns: 3—3 in *(76 mm)*/50 (single Mk 22); 8—40 mm/60 (1 quad, 2 twins) (Mk 2 and Mk 1)
Main engines: 4 Fairbanks-Morse 38D8 10-cyl diesels; 6 000 shp; 2 shafts
Speed, knots: 20; 12 economical
Range, miles: 13 000 at 12 knots
Complement: 216 (15 officers, 201 ratings)

Transferred to Mexico 1 October 1973. Employed as training ship with Gulf Fleet command. A/S weapons removed.

Radar: One Kelvin Hughes Type 14; One Kelvin Hughes Type 17.

Sonar: QCS 1.

COMODORO MANUEL AZUETA *7/1980, J. L. M. van der Burg*

1 "DURANGO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DURANGO	B 1 (ex-128)	Union Naval de Levante, Valencia	1934	28 June 1935	1936

Displacement, tons: 1 600 standard; 2 000 full load
Dimensions, feet (metres): 256·5 × 36·6 × 10·5 *(78·2 × 11·2 × 3·1)*
Guns: 2—4 in *(102 mm)*; 2—2·24 in *(57 mm)*; 4—20 mm
Main engines: 2 Enterprise DMR-38 diesels electric drive; 2 shafts; 5 000 bhp
Speed, knots: 18; 12 economical
Oil fuel, tons: 140
Range, miles: 3 000 at 12 knots
Complement: 149 (24 officers and 125 men)

Originally designed primarily as an armed transport with accommodation for 20 officers and 450 men. The two Yarrow boilers and Parsons geared turbines of 6 500 shp installed when first built were replaced by two 2 500 bhp diesels in 1967 when the ship was re-rigged with remodelled funnel.

DURANGO *1972, Mexican Navy*

4 Ex-US "CHARLES LAWRENCE" and "CROSLEY" CLASSES

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TEHUANTEPEC (ex-USS *Joseph M. Auman*, APD 117, ex-*DE 674*)	B 05 (ex-H 5)	Consolidated Steel Corporation	8 Nov 1943	5 Feb 1944	25 Apr 1945
USUMACINTA (ex-USS *Don O. Woods*, APD 118, ex-*DE 721*)	B 06 (ex-H 6)	Consolidated Steel Corporation	1 Dec 1943	19 Feb 1944	28 May 1945
COAHUILA (ex-USS *Rednour*, APD 102, ex-*DE 592*)	B 07	Bethlehem S.B. Co, Hingham, Mass	9 Jan 1944	1 Mar 1944	15 Mar 1945
CHIHUAHUA (ex-USS *Barber*, APD 57, ex-*DE 161*)	B 08	Norfolk Navy Yard, Norfolk, Va	27 Apr 1943	20 May 1943	10 Oct 1943

Displacement, tons: 1 400 standard; 2 130 full load
Dimensions, feet (metres): 306 × 37 × 11·3 *(93·3 × 11·3 × 3·4)*
Guns: 1—5 in *(127 mm)*/38 (single Mk 30);
6—40 mm/60 (3 twin Mk 1); 6—20 mm/80 (single)
Main engines: GE turbo-electric; 2 shafts; 12 000 shp
Speed, knots: 20; 13 economical
Boilers: 2 Foster-Wheeler "D" with superheater
Range, miles: 5 000 at 15 knots
Oil fuel, tons: 350
Complement: 204 plus 162 troops

B 05-06 were purchased by Mexico in December 1963 and B 08 on 17 February 1969.

Fire control: 5-in: local control.
40 mm: three Mk 51 GFCS.

Radar: Combined search: SC.
Navigation: Commercial.

CHIHUAHUA *1976, Mexican Navy*

PATROL SHIPS

18 Ex-US "AUK" CLASS

Name	*No.*
LEANDRO VALLE (ex-USS *Pioneer*, MSF 105)	G-01
GUILLERMO PRIETO (ex-USS *Symbol*, MSF 123)	G-02
MARIANO ESCOBEDO (ex-USS *Champion*, MSF 314)	G-03
PONCIANO ARRIAGA (ex-USS *Competent*, MSF 316)	G-04
MANUAL DOBLADO (ex-USS *Defense*, MSF 317)	G-05
SEBASTIAN L. DE TEJADA (ex-USS *Devastator*, MSF 318)	G-06
SANTOS DEGOLLADO (ex-USS *Gladiator*, MSF 319)	G-07
IGNACIO DE LA LLAVE (ex-USS *Spear*, MSF 322)	G-08
JUAN N. ALVARES (ex-USS *Ardent*, MSF 340)	G-09
MANUEL GUTIERREZ ZAMORA (ex-USS *Roselle*, MSF 379)	G-10
VALENTIN G. FARIAS (ex-USS *Starling*, MSF 64)	G-11
IGNACIO ALTAMIRANO (ex-USS *Sway*, MSF 120)	G-12
FRANCISCO ZARCO (ex-USS *Threat*, MSF 124)	G-13
IGNACIO L. VALLARTA (ex-USS *Velocity*, MSF 128)	G-14
JESUS G. ORTEGA (ex-USS *Chief*, MSF 315)	G-15
MELCHOR OCAMPO (ex-USS *Scoter*, MSF 381)	G-16
JUAN ALDAMA (ex-USS *Piloti* MSF 104)	G-18
HERMENEGILDO GALEANA (ex-USS *Sage*, MSF 111)	G-19

Displacement, tons: 1 090 standard; 1 250 full load
Dimensions, feet (metres): 221·2 × 32·2 × 10·8 *(67·5 × 9·8 × 3·3)*
Guns: 1—3 in/50; 4—40 mm (twins); 8—20 mm (twins)
Main engines: Diesel-electric; 2 shafts; 3 532 bhp
Speed, knots: 18; 10 economical
Range, miles: 4 300 at 10 knots
Complement: 9 officers and 96 ratings

Transferred six in February 1973, four in April 1973, nine in September 1973. Employed on patrol duties—*Mariano Matamoros* of this class employed on surveying duties with after armament replaced by large deck-house (see *Survey Vessels*—later).

Appearance: Variations are visible in the mid-ships section where some have a bulwark running from the break of the fo'c'sle to the quarter-deck. Minesweeping gear removed.

Radar: SO13 and commercial navigation set.

IGNACIO L. VALLARTA *2/1976*

4 Ex-US "ABNAKI" CLASS

Name	*No.*	*Builder*	*Commissioned*
OTOMI (ex-USS *Molala* ATF 106)	A 17	United Eng. Co, Alameda, Calif.	29 Sep 1943
YAQUI (ex-USS *Hitchiti* ATF 103)	A 18	Charleston S.B. and D.D. Co	15 Nov 1943
SERI (ex-USS *Abnaki* ATF 96)	A 19	Charleston S.B. and D.D. Co	25 Mar 1944
CORA (ex-USS *Cocopa* ATF 101)	A 20	Charleston S.B. and D.D. Co	27 May 1944

Displacement, tons: 1 675 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Gun: 1—3 in (76 mm)
Main engines: Diesel-electric; 3 000 bhp; 1 shaft = 15 knots
Complement: 75

Otomi transferred 1 August 1978, remainder 30 September 1978. All by sale.
Tugs used as patrol ships.

16 Ex-US "ADMIRABLE" CLASS

Name	*No.*
D 01 (ex-USS *Jubilant* AM 255)	01
D 02 (ex-USS *Hilarity* AM 241)	02
D 03 (ex-USS *Execute* AM 232)	03
D 04 (ex-USS *Specter* AM 306)	04
D 05 (ex-USS *Scuffle* AM 298)	05
D 06 (ex-USS *Eager* AM 224)	06
D 10 (ex-USS *Instill* AM 252)	10
D 11 (ex-USS *Device* AM 220)	11
D 12 (ex-USS *Ransom* AM 283)	12
D 13 (ex-USS *Knave* AM 256)	13
D 14 (ex-USS *Rebel* AM 284)	14
D 15 (ex-USS *Crag* AM 214)	15
D 16 (ex-USS *Dour* AM 223)	16
D 17 (ex-USS *Diploma* AM 221)	17
D 18 (ex-USS *Invade* AM 254)	18
D 19 (ex-USS *Intrigue* AM 253)	19

Displacement, tons: 650 standard; 945 full load
Dimensions, feet (metres): 184·5 × 33 × 9·8 *(56·3 × 10·1 × 3)*
Guns: 1—3 in/50; 4—40 mm; 6/8—20 mm (see note)
Main engines: 2 diesels; 2 shafts; 1 710 bhp = 15 knots
Range, miles: 4 300 at 10 knots
Complement: 104

Former US steel hulled fleet minesweepers. All completed in 1943-44.
D 20 now fitted for surveying (see *Survey Vessels*—later). Minesweeping gear removed.

Gunnery: 20 mm armament varies from six (two twin, two single) to eight (four twin).

D 18 (old number) *1976, Mexican Navy*

LIGHT FORCES

Note: It is reported that the navy is planning to order 12 fast attack craft of 450 tons of at least 30 knots and at least 4 000 miles range. Responses are believed to have been made by firms in Denmark, France, West Germany, Italy, Spain and the UK.

32 "AZTECA" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
ANDRES QUINTANA ROO	P 01	Ailsa Shipbuilding Co Ltd	1 Nov 1974
MATIAS DE CORDOVA	P 02	Scott & Sons, Bowling	22 Oct 1974
MIGUEL RAMOS ARIZPE	P 03	Ailsa Shipbuilding Co Ltd	23 Dec 1974
JOSE MARIA IZAZAGA	P 04	Ailsa Shipbuilding Co Ltd	19 Dec 1974
JUAN BAUTISTA MORALES	P 05	Scott & Sons, Bowling	19 Dec 1974
IGNACIO LOPEZ RAYON	P 06	Ailsa Shipbuilding Co Ltd	19 Dec 1974
MANUEL CRESCENCIO REJON	P 07	Ailsa Shipbuilding Co Ltd	4 July 1975
JUAN ANTONIO DE LA FUENTE	P 08	Ailsa Shipbuilding Co Ltd	4 July 1975
LEON GUZMAN	P 09	Scott & Sons, Bowling	7 Apr 1975
IGNACIO RAMIREZ	P 10	Ailsa Shipbuilding Co Ltd	17 July 1975
IGNACIO MARISCAL	P 11	Ailsa Shipbuilding Co Ltd	23 Sep 1975
HERIBERTO JARA CORONA	P 12	Ailsa Shipbuilding Co Ltd	7 Nov 1975
JOSE MARIA MATA	P 13	J. Lamont & Co Ltd	13 Oct 1975
FELIX ROMERO	P 14	Scott & Sons, Bowling	23 June 1975
FERNANDO M. LIZARDI	P 15	Ailsa Shipbuilding Co Ltd	24 Dec 1975
FRANCISCO J. MUGICA	P 16	Ailsa Shipbuilding Co Ltd	21 Nov 1975
PASTOR ROUAIX	P 17	Scott & Sons, Bowling	7 Nov 1975
JOSE MARIA DEL CASTILLO VELASCO	P 18	Lamont & Co Ltd	14 Jan 1975
LUIS MANUEL ROJAS	P 19	Lamont & Co Ltd	3 Apr 1976
JOSE NATIVIDAD MACIAS	P 20	Lamont & Co Ltd	2 Sep 1976
ESTEBAN BACA CALDERON	P 21	Lamont & Co Ltd	18 June 1976
GENERAL IGNACIO ZARAGOZA	P 22	Vera Cruz	1 June 1976
TAMAULIPAS	P 23	Vera Cruz	1979
YUCATAN	P 24	Vera Cruz	1979
TABASCO	P 25	Salina Cruz	1979
VERACRUZ	P 26	Vera Cruz	1979
TAMPICO	P 27	Vera Cruz	1980
PUEBLA	P 28	Salina Cruz	1980
MARGARITA MAZA de JUAREZ	P 29	Vera Cruz	1980
LEONA VICARIO	P 30	Vera Cruz	1980
JOSEFA ORTIZ de DOMINGUEZ	P 31	Salina Cruz	1980
—	P 32	Vera Cruz	1980

Displacement, tons: 130
Dimensions, feet (metres): 111·8 × 28·1 × 6·8 *(34·1 × 8·6 × 2)*
Guns: 1—40 mm; 1—20 mm
Main engines: 2—12-cyl Paxman Ventura diesels; 3 600 bhp = 24 knots
Range, miles: 2 500 at 12 knots
Complement: 24

Ordered by Mexico, for Fishery Protection duties, on 27 March 1973 from Associated British Machine Tool Makers Ltd.

JOSE MARIA IZAZAGA *1975, Mexican Navy*

4 "POLIMAR" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
POLIMAR 1	F 01 (ex-G 1)	Astilleros de Tampico	1 Oct 1962
POLIMAR 2	F 02 (ex-G 2)	Icacas Shipyard, Guerrero	1966
POLIMAR 3	F 03 (ex-G 3)	Icacas Shipyard, Guerrero	1966
POLIMAR 4	F 04 (ex-G 4)	Astilleros de Tampico	1968

Displacement, tons: 37 standard; 57 full load
Dimensions, feet (metres): 67·2 × 14·8 × 4·3 *(20·1 × 4·5 × 1·3)*
Gun: 1—20 mm
Main engines: 2 diesels; 456 bhp = 11 knots

Of steel construction.

POLIMAR 3 *1972, Mexican Navy*

2 "AZUETA" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
VILLALPANDO	F 06 (ex-G 9)	Astilleros de Tampico	1960
AZUETA	F 07 (ex-G 6)	Astilleros de Tampico	1959

Displacement, tons: 80 standard; 85 full load
Dimensions, feet (metres): 85·3 × 16·4 × 7 *(26 × 5 × 2·1)*
Guns: 2—13·2 mm (1 twin)
Main engines: Superior diesels; 600 bhp = 12 knots

Of all steel construction.

1 PATROL CRAFT

CUANAJUATO C 07

6 RIVER TYPE (RIVER PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
AM 4	F 14	Vera Cruz	1961
AM 5	F 15	Tampico	1961
AM 6	F 16	Vera Cruz	1962
AM 7	F 17	Tampico	1962
AM 8	F 18	Vera Cruz	1962
AM 10	F 20	Tampico	1962

Displacement, tons: 37
Dimensions, feet (metres): 56·1 × 16·4 × 8·2 *(17·1 × 5 × 2·5)*
Main engines: Diesel; speed = 6 knots

Of steel construction.

SURVEY VESSELS

1 Ex-US "ADMIRABLE" CLASS

D 20 (ex-*DM 20*, ex-USS *Harlequin* AM 365) H 02 (ex-ID-20)

Details given in "Admirable" class under *Patrol Ships*. Now unarmed.

1 Ex-US "AUK" CLASS

MARIANO MATAMOROS (ex-USS *Herald*, MSF 101) H 01 (ex-IG 17)

Details given in "Auk" class under *Patrol Ships*. Took over surveying duties from *Virgilio Uribe*. After guns replaced by large deck-house.

MARIANO MATAMOROS (old number) *10/1977, Dr Giorgio Arra*

SERVICE FORCES

2 Ex-US "511-1152" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
PANUCO (ex-USS *Park County*, LST 1077)	A 01	Bethlehem Steel Co, Hingham, Mass	8 May 1945
MANZANILLO (ex-USS *Clearwater County*, LST 602)	A 02	Chicago Bridge and Iron Co, Seneca, Illinois	31 Mar 1944

Displacement, tons: 1 653 standard; 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 4·3)*
Guns: 6—40 mm (1 twin; 4 singles)
Main engines: 2 General Motors diesels; 2 shafts; 1 700 bhp = 11 knots
Range, miles: 6 000 at 11 knots
Complement: 130
Troop capacity: 147

Transferred to Mexico on 20 September 1971 (purchased 12 July 1978) and 25 May 1972 respectively. Both employed as rescue ships.

PANUCO *1976, Mexican Navy*

1 Ex-US "FABIUS" CLASS (LIGHT FORCES TENDER)

Name	*No.*	*Builders*	*Commissioned*
VICENTE GUERRERO (ex-USS *Megara*, ARVA-6)	A 05	American Bridge Co, Ambridge, Penn	27 June 1945

Displacement, tons: 1 625 light; 4 100 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·3 × 4·3)*
Guns: 8—40 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 700 bhp = 10·6 knots
Range, miles: 6 000 at 10 knots
Complement: 250

Ex-aircraft repair ship sold to Mexico 1 October 1973.

VICENTE GUERRERO *1976, Mexican Navy*

Name	*No.*	*Builders*	*Commissioned*
ZACATECAS	B 02	Ulua Shipyard, Vera Cruz	1960

Displacement, tons: 785 standard
Dimensions, feet (metres): 158 × 27·2 × 10 *(48·2 × 8·3 × 2·7)*
Guns: 1—40 mm; 2—20 mm (single)
Main engine: 1 MAN diesel; 560 hp = 8 knots
Complement: 50 (13 officers and 37 men)

Launched in 1959. Cargo ship type. The hull is of welded steel construction. Cargo capacity 400 tons. Employed as a transport.

2 Ex-US YOG/YO TYPE (HARBOUR TANKERS)

Name	*No.*	*Builders*	*Commissioned*
AGUASCALIENTES (ex-*YOG 6*)	A 03	Geo H. Mathis Co Ltd, Camden, N.J.	1943
TLAXCALA (ex-*YO 107*)	A 04	Geo Lawley & Son, Neponset, Mass	1943

Displacement, tons: 440 light; 1 400 full load
Dimensions, feet (metres): 159·2 × 32·9 × 13·3 *(48·6 × 10 × 4·1)*
Gun: 1—20 mm
Main engine: Fairbanks-Morse diesel; 1 shaft; 500 bhp = 8 knots
Capacity: 6 570 barrels
Complement: 26 (5 officers and 21 ratings)

Former US self-propelled fuel oil barges. Purchased in August 1964. Entered service in November 1964.

AUXILIARIES

2 Ex-US MARITIME ADMINISTRATION "V 4" CLASS (TUGS)

R-2 (ex-*Montauk*) A 12
R-3 (ex-*Point Vicente*) A 13

Displacement, tons: 1 863 full load
Dimensions, feet (metres): 191·3 × 37 × 18 *(58·3 × 11·3 × 5·5)*
Guns: 1—76 mm; 2—20 mm
Main engines: 2 Nat Supply 8-cyl diesels; 1 Kort nozzle = 14 knots
Range, miles: 9 000 at 14 knots

Part of a large class built 1943-45 by US Maritime Administration for civilian use. Not a successful design; most were laid up on completion. In 1968 six were taken from reserve and transferred by sale in June 1969. All originally unarmed—guns fitted in Mexico. R2—Gulf Fleet; R3—Pacific Fleet.

Radar: Kelvin Hughes.

PRAGMAR **PATRON**

Tugs acquired in 1973.

4 FLOATING DOCKS

Ex-US ARD 2 **Ex-US ARD 11** **Ex-US ARD 15**

ARD 2 (150 × 24·7 m) transferred August 1963 and ARD 11 (same size) in June 1974. Lift 3 550 tonnes. Two 10 ton cranes and 1 100 kW generator. ARD 15 has the same capacity and facilities—transferred April 1971.

Ex-US AFDL 28

Lift capacity of 1 000 tons. Built of steel. (61 × 19·5 m).
Built in 1944 and transferred in January 1973 and by purchase July 1978.

7 FLOATING CRANES

Ex-US YDs 156, 157, 179, 180, 183, 194 and 203, transferred September 1964 to July 1971. All, except 179 and 194, purchased July 1978.

1 PILE DRIVER

Ex-US YPD 43 leased August 1968 and purchased 31 January 1980.

1 DREDGER

Ex-US YM. Date of transfer not known.

MONTSERRAT

Senior Officers

Commissioner of Police:
Mr Galton B St John
CO Base:
Corporal Morson

Marine Police

The following craft is employed on general patrol duties under control of Montserrat Police Force.

1 BROOKE MARINE TYPE

EMERALD STAR ♠

Displacement, tons: 15
Length, feet (metres): 40 *(12)*
Guns: Can mount 3 MGs
Main engines: 2 diesels; 370 hp = 22 knots
Complement: 4

Purchased in 1971. Refitted October 1980.

Base

Plymouth

Mercantile Marine

Lloyd's Register of Shipping:
2 vessels of 1 010 tons gross

EMERALD STAR *1975, Montserrat Government*

MOROCCO

Diplomatic Representation

Defence Attaché in London:
Colonel Benomar Sbay

Personnel

(a) 1981: 1 800 officers and ratings (including 500 Marines)
(b) 18 months' national service

Bases

Casablanca, Safi, Agadir, Kenitra, Tangier

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Frigate	—	1
Fast Attack Craft (Gun)	6	— (2)
Large Patrol Craft	4	—
Coastal Patrol Craft	9	— (6)
Landing Craft	4	—
Customs Craft	12	—

General

At a time of tension in the Maghreb the increase in new construction is significant particularly with the increase from Soviet sources not only of the neighbouring Algerian force but also the long range capabilities, including submarines, of Libya. Frigates with an A/S capability are logical reinforcements and the choice of Spanish yards may also be a pointer.

Mercantile Marine

Lloyd's Register of Shipping:
145 vessels of 359 552 tons gross

DELETION

Frigate

1975 *Al Maouna*

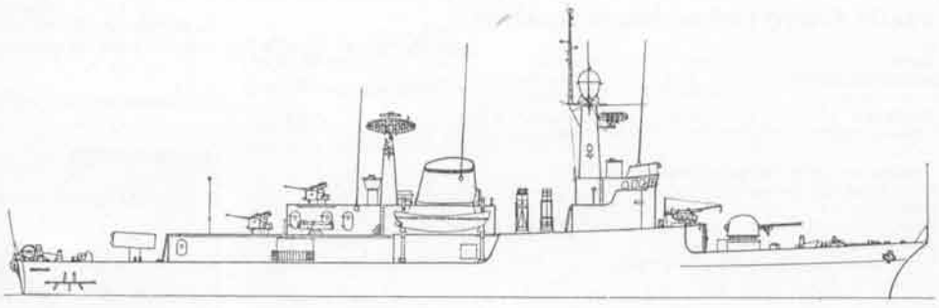
FRIGATE

0 + 1 MODIFIED "DESCUBIERTA" CLASS

Displacement, tons: 1 233 standard; 1 479 full load
Dimensions, feet (metres): 291·3 × 34 × 11 *(88·8 × 10·4 × 3·2)*
Missiles: SAM; Sea Sparrow (see note)
Guns: 1—76 mm/62 (single Compact);
2—40 mm/70 (single L70)
A/S weapons: 1—375 mm Bofors twin launcher;
6 (2 triple) Mk 32 torpedo tubes
Main engines: 4 MTU-Bazán 16V956 diesels; 16 000 bhp; 2 shafts; cp propellers
Speed, knots: 26
Range, miles: 4 000 cruising
Complement: 100

One ordered 7 June 1977 from Bazán, Cartagena, Spain. Laid down 20 March 1979 for delivery in 1982. Above data is for the Spanish ships of this class.

Missiles: It is not known what SSMs will be fitted but Exocet (either four MM 38 or eight MM 40) is most probable.



"DESCUBIERTA" Class (Spanish version)

LIGHT FORCES

Note: It is reported that two patrol craft (type unspecified) were transferred by Egypt in September 1979.

2 + (2) FRENCH PR 72 TYPE (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
OKBA	—	Soc. Francaise de Construction Navale	16 Dec 1976
TRIKI	—	Soc. Francaise de Construction Navale	12 July 1977

Displacement, tons: 375 standard; 445 full load
Dimensions, feet (metres): 188·8 × 25 × 7·1 *(57·5 × 7·6 × 2·1)*
Guns: 1—76 mm/62 (single Compact); 1—40 mm/70 (single Breda Bofors L70)
Main engines: 4 AGO V16 diesels; 4 shafts; 11 040 hp
Speed, knots: 28
Range, miles: 2 500 at 16 knots
Complement: 53 (5 officers; 48 ratings)

Ordered June 1973. This type can be fitted with Exocet—as the Vega control system will be installed this would be a simple operation. *Okba* launched 10 October 1975, *Triki* 1 February 1976. Two more in the New Construction Programme.

4 "CORMORAN" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 355 full load
Length, feet (metres): 169·2 *(51·6)*
Missiles: SSM; 4 Exocet
Guns: 1—76 mm/72 (single Compact); 1—40 mm/70 (L70)
Main engines: 2 MTU-Bazán TB 91 diesels; 8 000 bhp = 36 knots
Range, miles: 2 500 at 15 knots
Complement: 30

Ordered from Bazán, San Fernando (Cadiz), Spain 14 June 1977 for completion in 1981.

1 FRENCH "SIRIUS" CLASS (LARGE PATROL CRAFT)

TAWFIC (ex-*Aries M 758*)

Displacement, tons: 400 standard; 440 full load
Dimensions, feet (metres): 152 × 28 × 8·2 *(46·3 × 8·5 × 2·5)*
Guns: 1—40 mm; 1—20 mm
Main engines: 2 diesels; 2 shafts; 2 000 bhp = 10 knots
Range, miles: 3 000 at 10 knots
Complement: 38

Launched 31 March 1956. Transferred on loan by France on 28 November 1974. Ex-minesweeper used for patrol duties.

"SIRIUS" Class *1975, Dhr. J. van der Woude*

1 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
LIEUTENANT RIFFI	32	Constructions Mécaniques de Normandie, Cherbourg	May 1964

Displacement, tons: 325 standard; 400 full load
Dimensions, feet (metres): 173·9 × 24 × 10·2 *(53 × 7·3 × 3·1)*
Guns: 1—76 mm; 2—40 mm
A/S weapons: 2—A/S mortars
Main engines: 4 SEMT-Pielstick diesels; 2 cp propellers; 3 240 bhp = 18·5 knots
Range, miles: 3 000 at 12 knots
Complement: 49

Of modified "Fougeux" design. Laid down May 1963.

LIEUTENANT RIFFI *CMN*

1 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
AL BACHIR	22 (ex-*12*)	Constructions Mécaniques de Normandie, Cherbourg	30 Mar 1967

Displacement, tons: 125 light; 154 full load
Dimensions, feet (metres): 133·2 × 20·8 × 4·7 *(40·6 × 6·4 × 1·4)*
Guns: 2—40 mm; 2—MGs
Main engines: 2 SEMT-Pielstick diesels; 2 shafts; 3 600 bhp = 25 knots
Oil fuel, tons: 21
Range, miles: 2 000 at 15 knots
Complement: 23

Ordered in 1964. Launched 25 February 1967.

AL BACHIR *CMN*

1 Ex-FRENCH VC TYPE (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
EL SABIQ (ex-*P 762*, VC 12)	11	Chantiers Navals de l'Esterel	1957

Displacement, tons: 60 standard; 80 full load
Dimensions, feet (metres): 103·5 × 19 × 5·3 *(31·5 × 5·8 × 1·6)*
Missiles: Fitted for SS-12
Guns: 2—20 mm
Main engines: 2 MTU diesels; 2 shafts; 2 700 bhp = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 17

Former French seaward defence motor launch. Launched on 13 August 1957. Transferred from the French Navy to the Moroccan Navy on 15 November 1960 and renamed *El Sabiq*.

VC Type (under French colours) *1960, C. N. de l'Esterel*

6 + (6) P 32 TYPE (COASTAL PATROL CRAFT)

Name	No.	Builders	Commissioned
EL WACIL	—	Constructions Mécaniques de Normandie, Cherbourg	9 Oct 1975
EL JAIL	—	Constructions Mécaniques de Normandie, Cherbourg	3 Dec 1975
EL MIKDAM	—	Constructions Mécaniques de Normandie, Cherbourg	30 Jan 1976
EL HARIS	—	Constructions Mécaniques de Normandie, Cherbourg	30 June 1976
EL KHAFIR	—	Constructions Mécaniques de Normandie, Cherbourg	16 Apr 1976
ESSAHIR	—	Constructions Mécaniques de Normandie, Cherbourg	16 July 1976

Displacement, tons: 90
Dimensions, feet (metres): 105 × 17·6 × 9·8 *(32 × 5·3 × 2·9)*
Guns: 2—20 mm
Main engines: 2 MGO-12V BZSHR diesels; 2 700 bhp; 2 shafts = 29 knots
Range, miles: 1 500 at 15 knots
Complement: 17

Wooden hull sheathed in plastic.
The first six of these patrol craft were ordered in February 1974. Launch dates—*El Wacil* 12 June 1975, *El Jail* 10 October 1975, *El Mikdam* 26 November 1975, *El Haris* 3 March 1976, *El Khafir* 1 January 1976, *Essahir* 2 June 1976. Six more in the New Construction Programme.

Radar: One set Decca.

EL WACIL *1976, CMN*

3 COASTAL PATROL CRAFT

Arcor 31 type of 24 knots built by C. N. Arcor, Bordeaux.

AMPHIBIOUS FORCES

3 BATRAL TYPE

Name	No.	Builders	Commissioned
DAOUD BEN AICHA	—	Dubigeon, Normandie	28 May 1977
AHMED ES SAKALI	—	Dubigeon, Normandie	Sep 1977
ABOU ABDALLAH EL AYACHI	—	Dubigeon, Normandie	Mar 1978

Displacement, tons: 750 standard; 1 409 full load
Dimensions, feet (metres): 262·4 × 42·6 × 7·9 *(80 × 13 × 2·4)*
Guns: 2—40 mm; 2—81 mm mortars
Main engines: 2 diesels; 2 shafts; 3 600 hp = 16 knots
Range, miles: 4 500 at 13 knots
Complement: 47

Fitted with helicopter landing platform and with vehicle-stowage above and below decks. Can carry an extra 140 men and 12 vehicles. Two ordered on 12 March 1975. Third ordered 19 August 1975. Of same type as the French *Champlain*.

AHMED ES SAKALI *7/1980, Michael D. J. Lennon*

Name	*No.*	*Builders*	*Commissioned*
LIEUTENANT MALGHAGH	21	Chantiers Navals Franco-Belges	1965

Displacement, tons: 250 standard; 670 full load
Dimensions, feet (metres): 193·5 × 39·2 × 4·3 *(59 × 12 × 1·3)*
Guns: 2—20 mm; 1—120 mm mortar
Main engines: 2 MGO diesels; 2 shafts; 1 000 bhp = 8 knots
Complement: 16 (1 officer, 15 men)

Ordered early in 1963. Similar to the French landing craft of the EDIC type built at the same yard.

LIEUTENANT MALGHAGH *1971, Royal Moroccan Navy*

There are also the yacht *Essaouira,* 60 tons, from Italy in 1967, used as a training vessel for watchkeepers; and 12 customs boats, four of 40 tons, 82 ft, diesels 940 bhp = 23 knots, and eight 42·7 ft; all built in 1963. The *Murene,* Coast Guard cutter, has also been reported.

MOZAMBIQUE

Senior Appointment

Commander of the Navy:
Isaac Musakua

Personnel

(a) 700
(b) Voluntary

Training

Training has been provided by Tanzania and certain key personnel have been sent to the USSR.

Bases

Maputo (Naval HQ); Nacala; Beira; Pemba (Porto Amelia); Metangula (Lake Nyassa).

Mercantile Marine

Lloyd's Register of Shipping:
82 vessels of 37 887 tons gross

LIGHT FORCES

3 Ex-SOVIET "ZHUK" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 60
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 2—14·5 mm (twin, fwd); 1—12·7 mm (aft)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

First transferred August 1979, next two in October 1980.

1 Ex-SOVIET "POLUCHAT " CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 90 tons full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 400 hp = 20 knots
Range, miles: 1 500 at 10 knots
Complement: 15

Reported transferred by the USSR in 1977.

2 Ex-PORTUGUESE "BELLATRIX" CLASS (COASTAL PATROL CRAFT)

— (ex-*Sirius*) — (ex-*Vega*)

Displacement, tons: 23 standard; 27·6 full load
Dimensions, feet (metres): 68 × 16·2 × 4 *(20·7 × 5·1 × 1·2)*
Gun: 1—20 mm
Main engines: 2 Cummins diesels; 470 bhp = 15 knots
Complement: 7

3 Ex-PORTUGUESE "JUPITER" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 32 standard; 43·5 full load
Dimensions, feet (metres): 69 × 16·5 × 4·3 *(21 × 5 × 1·3)*
Guns: 2—20 mm (twin)
Main engines: 2 Cummins diesels; 1 270 bhp = 20 knots
Complement: 8

1 Ex-PORTUGUESE PATROL CRAFT

— (ex-*Antares* P 360)

Displacement, tons: 18
Dimensions, feet (metres): 56 × 15·2 × 4 *(17·1 × 4·6 × 1·2)*
Gun: 1—20 mm
Main engines: 2 Cummins diesels; 460 bhp = 18·2 knots
Complement: 7

SURVEY SHIP

1 Ex-BRITISH "BANGOR" CLASS

— (*ex-Almirante Lacerda,* ex-HMS *Caraquet*)

Displacement, tons: 830 full load
Dimensions, feet (metres): 180 × 28·5 × 9·5 *(54·8 × 8·6 × 2·8)*
Guns: 1—3 in *(76 mm)*; 2—20 mm
Main engines: Triple expansion; 2 shafts; 2 400 ihp = 16 knots (originally)
Boilers: Two 3-drum small-tube
Complement: 49

Built in Canada in 1941. Transferred by the Portuguese Navy in 1975. Alongside in Maputo—has some crew but, apparently, little capacity for movement.

AMPHIBIOUS CRAFT

— (ex-*Cimitarra*)

Displacement, tons: 500
Length, feet (metres): 187 *(56·9)*
Main engines: 2 diesels; 1 000 bhp
Complement: 20

Transferred by Portuguese Navy 1975. May have been wrecked subsequently.

NETHERLANDS

Administration

Minister of Defence:
Dr. P. B. R. de Geus
State Secretary of Defence (Personnel):
C. L. J. van Lent
State Secretary of Defence (Equipment):
Dr. W. F. van Eekelen
Chief of the Defence Staff:
General C. de Jager RNLA

Headquarters' Appointments

Chief of the Naval Staff:
Vice-Admiral H. L. van Beek
Vice Chief of the Naval Staff:
Rear-Admiral J. H. Scheuer
Flag Officer Naval Personnel:
Rear-Admiral R. H. Post
Flag Officer Naval Material:
Rear-Admiral T. P. J. M. Stoltz

Commands

Admiral Netherlands Home Command:
Vice-Admiral J. H. B. Hulshof
Commander Netherlands Task Group:
Rear-Admiral D. J. Berkhout
Commandant General Royal Netherlands Marine Corps:
Major-General J. J. A. den Haan
Flag Officer Netherlands Antilles:
Commodore P. A. A. J. van Oppen
Hydrographer:
Rear-Admiral J. C. Kreffer

Diplomatic Representation

Naval Attaché in Bonn:
Captain J. A. C. Hartogh
Naval Attaché in London and NLR CINCHAN:
Captain G. van Beusekom
Naval Attaché in Paris:
Captain A. J. van der Hout
Naval Attaché in Washington and NLR SACLANT:
Rear-Admiral G. Yzerman

Personnel

(a) 1 January 1981: 16 800 officers and ratings (including the Navy Air Service, Royal Netherlands Marine Corps and 411 officers and ratings of the W.R.Ni.NS.)
(b) 14-17 months' national service
Note: The 1979 estimates state that previously planned reductions in personnel would not now take place and the total would remain at about 16 900.

Bases

Main Base: Den Helder
Minor Bases: Flushing and Curacao
Fleet Air Arm: NAS Valkenburgh (LRMP), NAS De Kooy (helicopters)
R. Neth. Marines: Rotterdam, Doorn and Texel
Training Base: Amsterdam

Naval Air Force

Personnel: 1 700

Squadron	*Aircraft*	*Task*
2	—	LRMP work-up
7	6 Lynx (UH 14A)	Utility and Transport/ SAR
320	15 Neptunes	LRMP
321	6 Atlantics	LRMP
860	3 Wasp helicopters	Embarked
	18 Lynx (SH14B/C)	Embarked

Notes:
(a) On 9 December 1978 announced that 13 Orion P3C had been ordered for delivery from 1981 to replace Neptunes.
(b) 8 Lynx-SH14C helicopters with towed MAD ordered in 1978 for delivery 1980-81.
(c) Total of Lynx helicopters to be 40 including Wasp replacements.
(d) 2 F-27 LRMP aircraft deployed to Netherlands West Indies.

Prefix to Ships' Names

Hr Ms

Strength of the Fleet

Type	*Active*	*Building (Projected)*
Submarines (Patrol)	6	2
Destroyers	5	—
Frigates	11	7 (1)
Corvettes	6	—
MCM Support Ships	3	—
Mine Hunters	4	15
Minesweepers—Coastal	11	—
Diving Ships	3	—
Minesweepers—Inshore	16	—
Large Patrol Craft	5	—
LCAs	10	—
Surveying Vessels	3	—
Combat Support Ships	2	—
Training Ships	2	—
Tugs	12	—
Miscellaneous	31	—

Future New Construction Programme (1979-83)

2 Submarines (under construction)
1 Frigate (Command and Air Defence) (planned 1982)
12 Frigates (ASW) (five completed, seven building)
15 Mine Hunters (four building)
18 Lynx helicopters (delivered)
13 Orion aircraft (ordered—building)

Strength of the Fleet (1983)

6 Submarines
2 "Tromp" class
12 "Kortenaer" class
6 "Van Speyck" class
2 "Zuiderkruis" class
3 "Wolf" class
15 "Dokkum" class
5 "Alkmaar" class
16 MSI
3 AGS
13 Orion LRMP aircraft
24 helicopters
1 R.Neth. Marines Commando Group +1 Cold Weather Company
1 R.Neth. Marines Commando Group

Future New Construction Programme (1984-88)

2 Submarines (replacing "Potvis" class)
4 "M" class Frigates (replacing "Wolf" class)
Replacements for MSIs, "Balder" class, Wasp helicopters and Atlantic aircraft.
Midlife conversions of "Tromp" and "Zwaardvis" classes.

Planned Deployment in 1980s

2 ASW Groups each of 6 ASW frigates, 1 DLG, 1 Support Ship (helicopters in all ships) to operate in Eastlant Area
1 ASW Group of 6 ASW frigates and 1 DLG to operate in Channel Approaches (helicopters in all ships) (to include planned Support Ship in late 1980s)
1 ASW Group of 4 frigates to operate in Channel Command
6 Patrol Submarines
21 LRMP Aircraft in 3 squadrons (1 training)
2 MCM Groups of 12 ships each operating off Dutch ports
1 MCM Group of 7 ships for Channel command
1 R. Neth. Marine Commando Group with 1 Cold Weather Reinforced Company
1 R. Neth. Marine Commando Group

Mercantile Marine

Lloyd's Register of Shipping:
1 263 vessels of 5 723 845 tons gross

DELETIONS

Cruiser

1976 *De Zeven Provincien* to Peru as *Aguirre*

Destroyers

1974 *Noord Brabant* (after collision 9 Jan 1974)
1978 *Holland* (to Peru, Feb)
1979 *Zeeland* (1 Jan), *Friesland* (29 June)
Both sold for scrap 8 Nov
1980 *Limburg, Amsterdam* (sold to Peru 5 June)
Utrecht (sold to Peru 27 Aug)
1981 *Groningen* (sold to Peru 27 Aug 1980 for delivery 1981. Paid off 20 Jan 1981)

Frigate

1980 *Pieter Florisz* (to Greece on completion)

Admin. Escort

1979 *Onversaagd* (sold 31 July)

Minesweepers

1974 *Wildervank, Meppel, Goes, Brummen, Brouwershaven* to disposal
Axel, Aalsmeer to Oman
1975 *Waalwijk, Leersum* ("Wildervank" class)
Beemster, Bedum, Beilen, Borculo, Borne, Blaricum, Brielle, Breskens, Boxtel ("Beemster" class MSC)

Survey Ships

1973 *Snellius* as accommodation ship and
1977 for disposal by sale

Amphibious Forces

1975 *L 9521*
1978 *L 9526*

Tug

1979 *Y 8022*

Service Forces

1980 *Y 8335* (fuel lighter), *Y 8245* (harbour communication vessel)

PENNANT LIST

Submarines

S 802	Walrus
S 803	Zeeleeuw
S 804	Potvis
S 805	Tonijn
S 806	Zwaardvis
S 807	Tijgerhaai
S 808	Dolfijn
S 809	Zeehond

Destroyers

F 801	Tromp
F 806	De Ruyter
D 815	Overijssel
D 816	Drenthe
D 818	Rotterdam

Frigates

F 802	Van Speijk
F 803	Van Galen
F 804	Tjerk Hiddes
F 805	Van Nes
F 807	Kortenaer
F 808	Callenburgh
F 809	Van Kinsbergen
F 810	Banckert
F 811	Piet Heyn
F 813	Witte de With
F 814	Isaac Sweers
F 815	Evertsen
F 816	Abraham Crijnssen
F 823	Philips van Almonde
F 824	Bloys van Treslong
F 825	Jan van Brakel
F 826	Willem van der Zaan

Corvettes

F 817	Wolf
F 818	Fret
F 819	Hermelijn
F 820	Vos
F 821	Panter
F 822	Jaguar

MCM Command/Support Ships

A 855	Onbevreesd
A 858	Onvervaard
A 859	Onverdroten

Mine Hunters

M 801	Dokkum
M 818	Drunen
M 828	Staphorst
M 842	Veere
M 850	Alkmaar
M 851	Delfzijl
M 852	Dordrecht
M 853	Haarlem
M 854	Harlingen
M 855	Hellevoetsluis
M 856	Maassluis
M 857	Makkum
M 858	Middelburg
M 859	Scheveningen
M 860	Schiedam
M 861	Urk
M 862	Zierikzee
M 863	Vlaardingen
M 864	Willemstad

Diving Vessels

M 806	Roermond
M 820	Woerden
M 844	Rhenen

Coastal Minesweepers

M 802	Hoogezand
M 809	Naaldwijk
M 810	Abcoude
M 812	Drachten
M 813	Ommen
M 815	Giethoorn
M 817	Venlo
M 823	Naarden
M 827	Hoogeveen
M 830	Sittard
M 841	Gemert

Inshore Minesweepers

M 868	Alblas
M 869	Bussemaker
M 870	Lacomblé
M 871	Van Hamel
M 872	Van Straelen

Inshore Minesweepers

M 873	Van Moppes
M 874	Chömpff
M 875	Van Well-Groeneveld
M 876	Schuiling
M 877	Van Versendaal
M 878	Van der Wel
M 879	Van 't Hoff
M 880	Mahu
M 881	Staverman
M 882	Houtepen
M 883	Zomer

Large Patrol Craft

P 802	Balder
P 803	Bulgia
P 804	Freijr
P 805	Hadda
P 806	Hefring

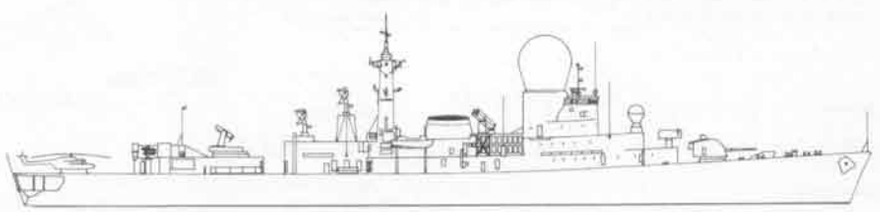
Amphibious Forces

L 9510-15	
L 9517-18	
L 9520	
L 9522	

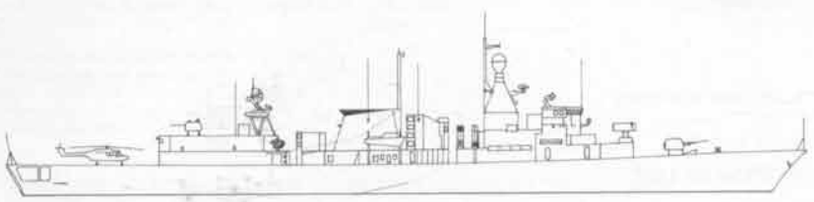
Auxiliary Ships

A 832	Zuiderkruis
A 835	Poolster
A 847	Argus
A 848	Triton
A 849	Nautilus
A 850	Hydra
A 856	Mercuur
A 870	Wamandai
A 871	Wambrau
A 872	Westgat
A 873	Wielingen
A 903	Zeefakkel
A 904	Buyskes
A 905	Blommendal
A 906	Tydeman
A 920	Dreg IV
A 923	Van Bochove
Y 8014	Harbour Tug
Y 8016	Harbour Tug
Y 8017	Harbour Tug
Y 8028	Harbour Tug
Y 8037	Berkel
Y 8038	Dintel
Y 8039	Dommel
Y 8040	Ijssel
Y 8050	Urania
Y 8536	Patria

"FRIESLAND" Class



"TROMP" Class



"KORTENAER" Class

"VAN SPEIJK" Class (modernised)

Drawings above: 1980, Ian Sturton

SUBMARINES

0 + 2 "WALRUS" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
WALRUS	S 802	Rotterdamse Droogdok Mij, Rotterdam	11 Oct 1979	—	1983
ZEELEEUW	S 803	Rotterdamse Droogdok Mij, Rotterdam	—	—	1984

Displacement, tons: 2 350 surfaced; 2 640 dived
Dimensions, feet (metres): 220 × 27·6 × 23 *(67 × 8·4 × 7)*
Torpedo tubes: 21 in *(533 mm)*
Main machinery: Diesel-electric; 3 SEMT-Pielstick diesels; 1 Holec electric motor
Complement: 49

In the 1975 Estimates money was set aside for design work on this class and a contract for the building of the first was signed 16 June 1979, the second was on 17 December 1979.
These will be an improvement on the "Zwaardvis" class with similar dimensions and identical silhouette. Use of new HT steel will increase the diving depth by some fifty per cent. A new fire control and electronic command system called Gipsy will be fitted and automation will reduce the crew from 65 to 49. To replace *Dolfijn* and *Zeehond*.

Cost: The cost of approximately 212·5 million guilders each will be spread across the building period.

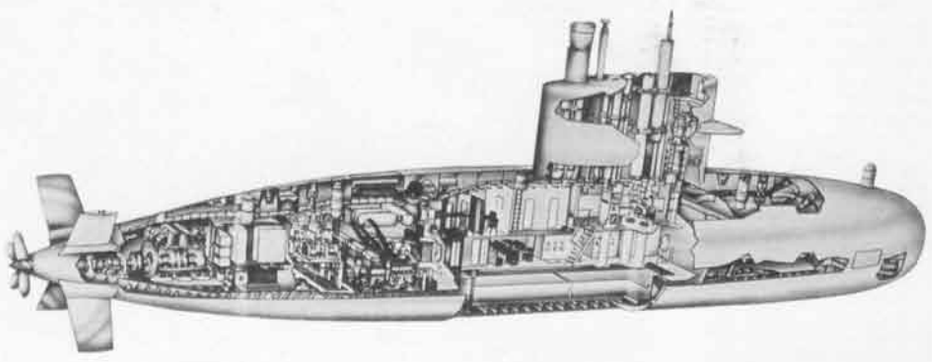
Electronics: SEWACO VIII Command System.

Future: Two more of this class are planned to continue the building stream to replace "Potvis" class.

Radar: Navigation: Decca.

Sonar: Thomson CSF.

Torpedo tubes: Water-slug type to fire Mk 48 torpedoes and encapsulated Harpoon.



WALRUS *1980, Royal Netherlands Navy*

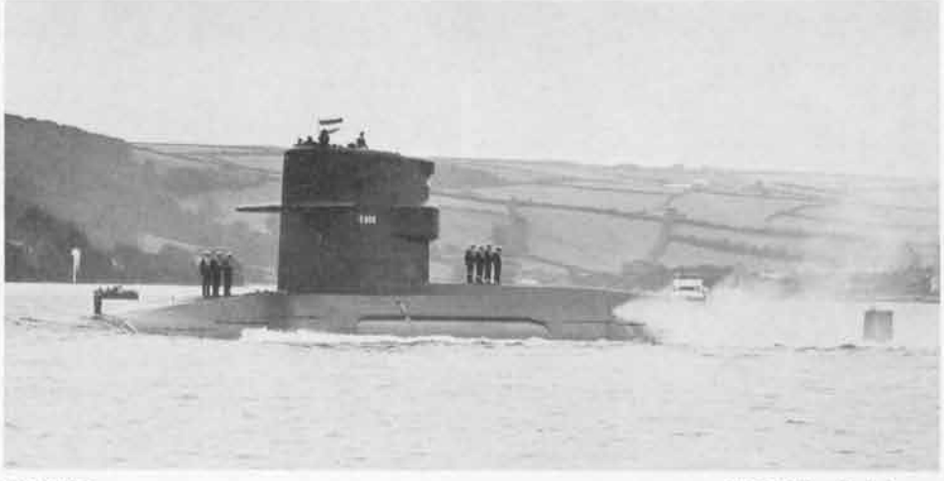
2 "ZWAARDVIS" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ZWAARDVIS	S 806	Rotterdamse Droogdok Mij, Rotterdam	14 July 1966	2 July 1970	18 Aug 1972
TIJGERHAAI	S 807	Rotterdamse Droogdok Mij, Rotterdam	14 July 1966	25 May 1971	20 Oct 1972

Displacement, tons: 2 350 surfaced; 2 640 dived
Dimensions, feet (metres): 217·2 × 33·8 × 23·3 *(66·2 × 10·3 × 7·1)*
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Main machinery: Diesel-electric; 3 diesel generators; 1 shaft
Speed, knots: 13 surfaced; 20 dived
Complement: 65

In the 1964 Navy Estimates a first instalment was approved for the construction of two conventionally powered submarines of tear-drop design. HSA M8 fire control.

Radar: Type 1001.



ZWAARDVIS *9/1979, Michael D. J. Lennon*

2 "POTVIS" and 2 "DOLFIJN" CLASSES

Name	No.	Builders	Laid down	Launched	Commissioned
POTVIS	S 804	Wilton-Fijenoord, Schiedam	17 Sep 1962	12 Jan 1965	2 Nov 1965
TONIJN	S 805	Wilton-Fijenoord, Schiedam	27 Nov 1962	14 June 1965	24 Feb 1966
DOLFIJN	S 808	Rotterdamse Droogdok Mij, Rotterdam	30 Dec 1954	20 May 1959	16 Dec 1960
ZEEHOND	S 809	Rotterdamse Droogdok Mij, Rotterdam	30 Dec 1954	20 Feb 1960	16 Mar 1961

Displacement, tons: 1 140 standard; 1 494 surfaced; 1 826 dived
Dimensions, feet (metres): 260·9 × 25·8 × 16·4 *(79·5 × 7·8 × 5)*
Torpedo tubes: 8—21 in *(533 mm)* (4 bow, 4 stern)
Main machinery: 2 MAN diesels; 3 100 bhp; electric motors; 4 200 hp; 2 shafts
Speed, knots: 14·5 surfaced; 17 dived
Complement: 67

These submarines are of a triple-hull design, giving a diving depth 980 ft *(300 m)*. *Potvis* and *Tonijn*, originally voted for in 1949 with the other pair, but suspended for some years, had several modifications compared with *Dolfijn* and *Zeehond* and were officially considered to be a separate class; but modernisation of both classes has been completed, and all four boats are now almost identical. HSA M8 fire control.
To be replaced by "Walrus" class.
Construction: The hull consists of three cylinders arranged in a triangular shape. The upper cylinder accommodates the crew, navigational equipment and armament. The lower two cylinders house the propulsion machinery comprising diesel engines, batteries and electric motors, as well as store-rooms.

Radar: Type 1001.

TONIJN *4/1979, Michael D. J. Lennon*

DESTROYERS

2 "TROMP" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
TROMP	F 801	Koninklijke Maatschappij De Schelde, Flushing	4 Sep 1971	4 June 1973	3 Oct 1975
DE RUYTER	F 806	Koninklijke Maatschappij De Schelde, Flushing	22 Dec 1971	9 Mar 1974	3 June 1976

Displacement, tons: 3 900 standard; 4 580 full load
Dimensions, feet (metres): 453·3 × 48·6 × 15·1 *(138·2 × 14·8 × 4·6)*
Aircraft: 1 Lynx helicopter
Missiles: SSM; Harpoon (eight single cells) (16 missiles); SAM; Tartar (single Mk 13 launcher) (40 missiles); SAM; Sea Sparrow (octuple launcher) (16 missiles)
Guns: 2—4·7 in *(120 mm)*/50 (twin Bofors)
A/S weapons: 6 (2 triple) Mk 32 ASW torpedo tubes
Main engines: 2 Olympus gas turbines; 50 000 hp; 2 Tyne cruising gas turbines, 8 000 hp
Speed, knots: 30
Complement: 249

First design allowance was voted for in 1967 estimates. Ordered (announced on 27 July 1970) for laying down in 1971. Hangar and helicopter landing platform aft. Fitted as flagships.

ECM: Two Knebworth Corvus Chaff projectors (and illuminators).

Electronics: SEWACO I command system.

Engineering: Each ship carries four 1 000 kW diesel generators by Ruston Paxman, England.

Gunnery: Turrets from old destroyer *Gelderland* with considerable modifications, including full automation.

Midlife conversions: Scheduled for 1983-88.

Radar: Search and designator: One HSA 3D in radome.
Search, tracker and fire control for Sea Sparrow and 4·7-in guns: One HSA WM 25.
Tartar control: Two SPG-51.
Navigation: Two Decca.

Sonar: One CWE 610.

DE RUYTER *8/1980, Wright and Logan*

TROMP *6/1980, Michael D. J. Lennon*

TROMP *6/1977, C. and S. Taylor*

3 "FRIESLAND" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
OVERIJSSEL	D 815	Dok en Werfmaatschappij Wilton-Fijenoord	15 Oct 1953	8 Aug 1955	4 Oct 1957
DRENTHE	D 816	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	9 Jan 1954	26 Mar 1955	1 Aug 1957
ROTTERDAM	D 818	Rotterdamse Droogdok Mij, Rotterdam	7 Jan 1954	26 Jan 1956	28 Feb 1957

Displacement, tons: 2 497 standard; 3 070 full load
Dimensions, feet (metres): 380·5 × 38·5 × 17 *(116 × 11·7 × 5·2)*
Guns: 4—4·7 in *(120 mm)*/50 (twin Bofors);
4—40 mm/70 (single L70)
A/S weapons: Two 4-barrelled 375 mm. Bofors rocket launchers; 2 DC racks
Main engines: 2 Werkspoor geared turbines, 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 36
Complement: 274

These ships have side armour as well as deck protection. Twin rudders. Propellers 370 rpm. Being replaced by "Kortenaer" class of frigates.
Drenthe damaged by boiler room fire 12 November 1980 and may not be repaired.

Gunnery: The 4·7-in guns are fully automatic with a rate of fire of 42 rounds per minute. All guns are radar controlled. Originally six 40 mm guns were mounted.

Radar: Search: LW 03.
Tactical: DA 05.
Fire control: HSA M 45 for 4·7-in guns.
HSA fire control for 40 mm and A/S rockets.

Sonar: CWE 10-N. PAE I-N.

Torpedo tubes: *Overijssel* was equipped with eight 21-in A/S torpedo tubes (single, four on each side) in 1961, and the others were to have been, but the project was dropped and tubes already fitted were removed.

DRENTHE *5/1980, Wright and Logan*

FRIGATES

5 + 7 + (1) "KORTENAER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
KORTENAER	F 807	Koninklijke Maatschappij De Schelde, Flushing	8 Apr 1975	18 Dec 1976	26 Oct 1978
CALLENBURGH	F 808	Koninklijke Maatschappij De Schelde, Flushing	30 June 1975	12 Mar 1977	26 July 1979
VAN KINSBERGEN	F 809	Koninklijke Maatschappij De Schelde, Flushing	2 Sep 1975	16 Apr 1977	24 Apr 1980
BANCKERT	F 810	Koninklijke Maatschappij De Schelde, Flushing	25 Feb 1976	13 July 1978	29 Oct 1980
PIET HEYN	F 811	Koninklijke Maatschappij De Schelde, Flushing	28 Apr 1977	3 June 1978	May 1981
WITTE DE WITH	F 813	Koninklijke Maatschappij De Schelde, Flushing	13 June 1978	27 Oct 1979	summer 1982
ABRAHAM CRIJNSSEN	F 816	Koninklijke Maatschappij De Schelde, Flushing	25 Oct 1978	1981	late 1982
PHILIPS VAN ALMONDE	F 823	Dok en Werfmaatschappij Wilton-Fijenoord	3 Oct 1977	11 Aug 1979	late 1981
BLOYS VAN TRESLONG	F 824	Dok en Werfmaatschappij Wilton-Fijenoord	27 Apr 1978	15 Nov 1980	late 1982
JAN VAN BRAKEL	F 825	Koninklijke Maatschappij De Schelde, Flushing	16 Nov 1979	1981	autumn 1983
WILLEM VAN DER ZAAN	F 826	Koninklijke Maatschappij De Schelde, Flushing	15 Jan 1980	1982	late 1983
PIETER FLORISZ	F 812	Koninklijke Maatschappij De Schelde, Flushing	21 Jan 1981	—	early 1984

Displacement, tons: 3 050 standard; 3 630 full load
Dimensions, feet (metres): 428 × 47·2 × 20·3 (screws) *(130·5 × 14·4 × 6·2)*
Aircraft: 2 Lynx helicopters (see note)
Missiles: SSM: 8 Harpoon;
SAM: NATO Sea Sparrow PDMS
Guns: 1—76 mm/62 (single Compact); 1—40 mm (see notes)
A/S weapons: 4 (2 twin) Mk 32 torpedo tubes for Mk 46 torpedoes in after deckhouse
Main engines: 2 Rolls-Royce Olympus TM3B gas turbines = 50 000 shp;
2 Rolls-Royce Tyne RM1C gas turbines = 8 000 shp;
2 vp propellers
Speed, knots: 30
Range, miles: 4 700 on Tyne cruising turbines at 16 knots
Complement: 167

First four of class ordered 31 August 1974; second four 28 November 1974; third four 29 December 1976 (two built by same constructors as rest of class, two by Wilton-Fijenoord). The thirteenth of class (SAM version) is to have different armament (see note below). *Callenburgh* ready for trials February 1979 and *Van Kinsbergen* 2 January 1980. Thereafter ships will follow at approximately six monthly intervals. These ships are to replace the "Holland" and "Friesland" classes. Cost at 1974 prices £37 million.

Air Defence Ship/Flagship: Expected to be ordered in 1982. Hull and engines same as remainder of "Kortenaer" class but with AA armament.

Building area: Covered area at No 6 repair dock at Wilton, Fijenoord. Two covered building docks and covered slipway at De Schelde.

Complement: Reduced to 167 by adoption of large amount of automation. Accommodation for 200 (18 officers, 35 senior rates, 147 junior ratings).

Electronics: SEWACO II command system.

Gunnery: VSR ADS is to be mounted on top of hangar when system becomes available. Until then second 76 mm will be mounted in lieu on first two ships and 40 mm on remainder.

Helicopters: Although only one Lynx is carried in peacetime there is hangar accommodation for two.

Radar: Air search: One LW-08.
Surface search: One DA-05.
Fire control: One WM-25 system; one STIR.
Navigation: One ZW-06.

CALLENBURGH *9/1980, Michael D. J. Lennon*

BANCKERT *5/1980, Wright and Logan*

Rocket launchers: Two Knebworth Corvus launchers.

Sonar: SQS 505 (bow mounted).

Transfer: *Pieter Florisz* (F 812) sold to Greece during construction, mid-1980. Keel of replacement ship laid down.

6 "VAN SPEIJK" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
VAN SPEIJK	F 802	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	1 Oct 1963	5 Mar 1965	14 Feb 1967
VAN GALEN	F 803	Koninklijke Maatschappij De Schelde, Flushing	25 July 1963	19 June 1965	1 Mar 1967
TJERK HIDDES	F 804	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	1 June 1964	17 Dec 1965	16 Aug 1967
VAN NES	F 805	Koninklijke Maatschappij De Schelde, Flushing	25 July 1963	26 Mar 1966	9 Aug 1967
ISAAC SWEERS	F 814	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	5 May 1965	10 Mar 1967	15 May 1968
EVERTSEN	F 815	Koninklijke Maatschappij De Schelde, Flushing	6 July 1965	18 June 1966	21 Dec 1967

Displacement, tons: 2 255 standard; 2 735 full load
Dimensions, feet (metres): 372 × 41 × 18 *(113·4 × 12·5 × 5·5)*
Aircraft: 1 Lynx helicopter
Missiles: SSM; 8 Harpoon;
SAM; Seacat (2 quad launchers)
Gun: 1—76 mm/62 (single Compact)
A/S weapons: 6 (2 triple) Mk 32 torpedo tubes
Main engines: 2 double reduction geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox (fully automated)
Speed, knots: 30
Complement: 175 (after modernisation)

Four ships were ordered in October 1962 and two in 1964.

Design: Although in general these ships are based on the design of the British Improved Type 12 ("Leander" class), there are a number of modifications to suit the requirements of the Royal Netherlands Navy. As far as possible equipment of Netherlands' manufacture was installed. This resulted in a number of changes in the ship's superstructure compared with the British "Leander" class.

Electronics: SEWACO V integration system and Daisy data-processing.

Modernisation: This class is undergoing mid-life modernisation at Rykswerf Den Helder. This includes replacement of 4·5-in turret by 76 mm, A/S mortar by torpedo tubes, new electronics and electrics, updating of Ops. Room by ADP, improved communications, extensive automation with reduction in complement, enlarged hangar for Lynx and improved habitability. Dates as follows: *Van Speijk,* 24 Dec 1976-3 Jan 1978; *Van Galen,* 15 July 1977-30 Nov 1979; *Van Nes,* 31 Mar 1978-1 Dec 1980; *Tjerk Hiddes,* 15 Dec 1978-1 Aug 1981; *Evertsen,* 18 July 1979-1 Apr 1982; *Isaac Sweers,* 1 July 1980-1 Dec 1982.

Electronics: ECM equipment.

Radar: (new radar systems being fitted and integrated with Daisy during modernisation).
LW-03 air surveillance on mainmast.
DA 05 target indicator on foremast.
Kelvin-Hughes Surface-warning/navigation set on foremast (to be replaced by new navigation/helicopter control set).
One—M45 for 76 mm gun.
Two—M44 for Seacat.

Sonar: Hull-mounted and VDS.

VAN GALEN (after modernisation) *6/1980, Wright and Logan*

VAN GALEN (after modernisation) *2/1980, Michael D. J. Lennon*

"M" CLASS

Displacement, tons: 2 650
Dimensions, feet (metres): 366·7 × 45·3 × 13·1 *(111·8 × 13·8 × 4)*
Aircraft: 1 Lynx helicopter
Missiles: SSM; 8 Harpoon (quads);
SAM; Sea Sparrow (octuple with reloads)
Guns: 1—76 mm OTO Melara Compact; 1—VSR ADS system
A/S weapons: 6—Mk 32 Torpedo tubes (triple)
Main engines: CODOG; 1 Olympus gas turbine; 28 000 bhp; 2 diesels; 8 400 bhp
Speed, knots: 28 gas; 21 diesels
Range, miles: 4 000 at 19 knots
Complement: 80

A class to replace the "Wolf" class. Funds unlikely to be available before 1983.

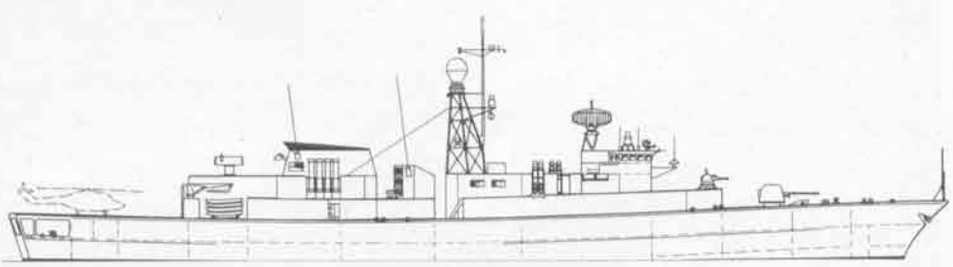
Communications: To NATO oceangoing escort standards.

Countermeasures: Repeater jammers; ESM; two RBOC chaff launchers; torpedo decoy.

Electronics: SEWACO II command system.

Radar: Combined warning; DA-08.
Surface warning/helicopter control; ZW-06.
Fire control: WM 25.

Sonar: PHS 36.



"M" Class *1980, Royal Netherlands Navy*

CORVETTES

6 "WOLF" CLASS

Name	*No.*	*Builders*	*Commissioned*
WOLF (ex-*PCE 1607*)	F 817	Avondale Marine Ways, Inc, New Orleans, La	26 Mar 1954
FRET (ex-*PCE 1604*)	F 818	General Shipbuilding and Engineering Works, Boston	4 May 1954
HERMELIJN (ex-*PCE 1605*)	F 819	General Shipbuilding and Engineering Works, Boston	5 Aug 1954
VOS (ex-*PCE 1606*)	F 820	General Shipbuilding and Engineering Works, Boston	2 Dec 1954
PANTER (ex-*PCE 1608*)	F 821	Avondale Marine Ways, Inc, New Orleans, La	11 June 1954
JAGUAR (ex-*PCE 1609*)	F 822	Avondale Marine Ways, Inc, New Orleans, La	11 June 1954

Displacement, tons: 870 standard; 975 full load
Dimensions, feet (metres): 184·5 × 33·7 × 9·5 *(56·2 × 10·3 × 2·9)*
Guns: 1—3 in *(76 mm)*; 6—40 mm *(Jaguar, Panter, Fret:* 4—40 mm); 8—20 mm (not mounted except 2 in *Fret*)
A/S weapons: 1 Hedgehog; 2 DCTs *(Jaguar, Panter:* 4 DCTs); 2 DC racks
Main engines: 2 General Motors diesels; 1 800 bhp; 2 shafts
Speed, knots: 15
Range, miles: 4 300 at 10 knots
Complement: 78

Built as part of the US "off-shore" agreement—all laid down 1952-53. The 20 mm guns not fitted in peacetime (see above).

Radar: Kelvin Hughes navigation set.

Replacement: To be scrapped as from 1983. Two "Friesland" class destroyers may be kept over-age to bridge the gap until "M" class is available.

Sonar: One hull-mounted set.

FRET *8/1978, Michael D. J. Lennon*

LIGHT FORCES

5 "BALDER" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BALDER	P 802	Rijkswerf Willemsoord	6 Aug 1954
BULGIA	P 803	Rijkswerf Willemsoord	9 Aug 1954
FREYR	P 804	Rijkswerf Willemsoord	1 Dec 1954
HADDA	P 805	Rijkswerf Willemsoord	3 Feb 1955
HEFRING	P 806	Rijkswerf Willemsoord	23 Mar 1955

Displacement, tons: 169 standard; 225 full load
Dimensions, feet (metres): 119·1 × 20·2 × 6·3 *(36·3 × 6·2 × 1·9)*
Guns: 1—40 mm; 3—20 mm
A/S weapons: DCs (2 racks, 2 DCTs, 2 chutes)
Main engines: Diesels; 2 shafts; 1 300 shp = 15·5 knots
Range, miles: 1 000 at 13 knots
Complement: 28

Built on US "off-shore" account.

Radar: Decca navigation set.

Sonar: One hull-mounted set.

HADDA *11/1978, Leo van Ginderen*

MINE WARFARE FORCES

0 + 15 "ALKMAAR" CLASS (TRIPARTITE TYPE) (MINE HUNTERS)

Name	*No.*	*Builders*	*Commissioned*
ALKMAAR	850	Van der Giessen-de Noord-Alblasserdam	1982
DELFZIJL	851	Van der Giessen-de Noord-Alblasserdam	1982
DORDRECHT	852	Van der Giessen-de Noord-Alblasserdam	1983
HAARLEM	853	Van der Giessen-de Noord-Alblasserdam	1983
HARLINGEN	854	Van der Giessen-de Noord-Alblasserdam	1984
HELLEVOETSLUIS	855	Van der Giessen-de Noord-Alblasserdam	1984
MAASSLUIS	856	Van der Giessen-de Noord-Alblasserdam	1985
MAKKUM	857	Van der Giessen-de Noord-Alblasserdam	1985
MIDDELBURG	858	Van der Giessen-de Noord-Alblasserdam	1986
SCHEVENINGEN	859	Van der Giessen-de Noord-Alblasserdam	1986
SCHIEDAM	860	Van der Giessen-de Noord-Alblasserdam	1987
URK	861	Van der Giessen-de Noord-Alblasserdam	1987
ZIERIKZEE	862	Van der Giessen-de Noord-Alblasserdam	1988
VLAARDINGEN	863	Van der Giessen-de Noord-Alblasserdam	1988
WILLEMSTAD	864	Van der Giessen-de Noord-Alblasserdam	1989

Displacement, tons: 510 standard; 544 full load
Dimensions, feet (metres): 161 × 29·2 × 8·2 *(49·1 × 8·9 × 2·5)*
Gun: 1—20 mm (an additional short range missile system may be added for patrol duties)
Minehunting: 2 PAP systems
Minesweeping: Mechanical sweep gear
Main engine: 1 Werkspoor diesel; single axial propeller; 2 280 hp = 15 knots
Auxiliary propulsion: 2—88 kW motors = 7 knots
Range, miles: 3 000 at 12 knots
Endurance: 15 days
Complement: From 29-40 depending on task

This class is the Netherlands' part of a co-operative plan with Belgium and France for GRP hulled minehunters. The whole class will be built in a specially constructed "ship-factory" (472 × 141 ft) which was completed December 1978. First two ships ordered June 1977, 850 laid down 15 December 1978, 851 on 29 May 1980, 852 on 12 January 1981; six currently ordered and remainder at two per year.
Original building problems apparently surmounted. Ships will be launched virtually ready for trials.

Electronics: Automatic radar navigation system; automatic data processing and display; EVEC automatic pilot; automatic hovering.

Names: *Veere* (862) renamed *Zierikzee* in 1980.

Sonar: DUBM-21A.

Tasks: A 5 ton container can be shipped, stored for varying tasks—research; patrol; extended diving; drone control.

"ALKMAAR" Class *1978, Royal Netherlands Navy*

3 Ex-US "AGGRESSIVE" CLASS (MCM SUPPORT SHIPS)

Name	*No.*	*Builders*	*Commissioned*
ONBEVREESD (ex-*AM 481*)	A 855 (ex-*M 885*)	Astoria Marine Construction Co	21 Sep 1954
ONVERVAARD (ex-*AM 482*)	A 858 (ex-*M 888*)	Astoria Marine Construction Co	31 Mar 1955
ONVERDROTEN (ex-*AM 485*)	A 859 (ex-*M 889*)	Peterson Builders, Wisconsin	22 Nov 1954

Displacement, tons: 620 standard; 720 full load
Dimensions, feet (metres): 172 × 36 × 13·6 *(52·5 × 11 × 4·2)*
Gun: 1—40 mm
A/S weapons: 2 DCs
Main engines: Diesels; 2 280 bhp = 14 knots
Oil fuel, tons: 46
Range, miles: 2 400 at 10 knots
Complement: 42

Built in USA for the Netherlands. Of wooden and non-magnetic construction. Originally designed as Minesweepers—Ocean—reclassified in 1966 and in 1972. *Mercuur* (ex-*Onverschrokken*) was converted into a Tender and Torpedo Trials Ship in 1972.

ONBEVREESD *1979, J. A. Verhoog*

18 "DOKKUM" CLASS (MINESWEEPERS—COASTAL, MINE HUNTERS and DIVING VESSELS)

DOKKUM M 801 (H)
HOOGEZAND M 802
ROERMOND M 806 (D)
NAALDWIJK M 809
ABCOUDE M 810
DRACHTEN M 812
OMMEN M 813
GIETHOORN M 815
VENLO M 817
DRUNEN M 818 (H)
WOERDEN M 820 (D)
NAARDEN M 823
HOOGEVEEN M 827
STAPHORST M 828 (H)
SITTARD M 830
GEMERT M 841
VEERE M 842 (H)
RHENEN M 844 (D)

Displacement, tons: 373 standard; 453 full load
Dimensions, feet (metres): 149·8 × 28 × 6·5 *(45·7 × 8·5 × 2)*
Guns: 2—40 mm
Main engines: 2 diesels; Fijenoord MAN; 2 500 bhp = 16 knots
Range, miles: 2 500 at 10 knots
Complement: 27-36 depending on task

Of 32 Western Union type coastal minesweepers built in the Netherlands, 18 were under offshore procurement as the "Dokkum" class, with MAN engines, and 14 on Netherlands' account as the "Wildervank" class, with Werkspoor diesels. All launched in 1954-56 and completed in 1955-56.
Of the "Dokkum" class four have been converted to mine hunters (H), (1968-73) and three to diving vessels (D) (1962-68). The remaining eleven minesweepers and diving vessels of this class were subject to a fleet rehabilitation and modernisation programme completed by 1977. All "Wildervank" class deleted by 1976. "Dokkum" class to be replaced by "Alkmaar" class.

Sonar: Type 193 in hunters.

RHENEN (Diving vessel) *6/1979, Michael D. J. Lennon*

DOKKUM (Hunter) *9/1978, Michael D. J. Lennon*

GIETHOORN (Sweeper) *7/1979, Wright and Logan*

16 "VAN STRAELEN" CLASS (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
ALBLAS	M 868	Werf de Noord, Albasserdam	12 Mar 1960
BUSSEMAKER	M 869	G. de Vries Lentsch Jr, Amsterdam	1960
LACOMBLE	M 870	N.V. de Arnhemse Scheepsbouw Maatschappij	1960
VAN HAMEL	M 871	G. de Vries Lentsch Jr, Amsterdam	1960
VAN STRAELEN	M 872	N.V. de Arnhemse Scheepsbouw Maatschappij	1960
VAN MOPPES	M 873	Werf de Noord, Albasserdam	1960
CHÖMPFF	M 874	Werf de Noord, Albasserdam	1961
VAN WELL GROENEVELD	M 875	N.V. de Arnhemse Scheepsbouw Maatschappij	1961
SCHUILING	M 876	G. de Vries Lentsch Jr, Amsterdam	1961
VAN VERSENDAAL	M 877	Werf de Noord, Albasserdam	1961
VAN DER WEL	M 878	G. de Vries Lentsch Jr, Amsterdam	1961
VAN 'T HOFF	M 879	Werf de Noord, Albasserdam	1961
MAHU	M 880	Werf de Noord, Albasserdam	1962
STAVERMAN	M 881	G. de Vries Lentsch Jr, Amsterdam	1962
HOUTEPEN	M 882	N.V. de Arnhemse Scheepsbouw Maatschappij	1962
ZOMER	M 883	N.V. de Arnhemse Scheepsbouw Maatschappij	1962

Displacement, tons: 151 light; 169 full load
Dimensions, feet (metres): 99·3 × 18·2 × 5·2 *(30·3 × 5·6 × 1·6)*
Gun: 1—20 mm
Main engines: Werkspoor diesels; 2 shafts; 1 100 bhp = 13 knots
Complement: 14

Eight were built under the offshore procurement programme, with MDAP funds, and the remaining eight were paid for by the Netherlands. All ordered in mid-1957. Built of non-magnetic materials. *Alblas*, the first, was laid down on 26 February 1958, launched on 29 June 1959, started trials on 15 January 1960. To be replaced after 1983.

CHÖMPFF *12/1978, Leo van Ginderen*

AMPHIBIOUS FORCES

L 9510 **L 9511** **L 9512** **L 9513** **L 9514** **L 9515** **L 9517** **L 9518** **L 9520** **L 9522**

Displacement, tons: 13·6
Dimensions, feet (metres): 46·2 × 11·5 × 6 *(14·1 × 3·5 × 1·8)*
Main engine: Rolls-Royce diesel; Schottel propeller; 200 bhp = 12 knots
Complement: 3

Landing craft made of polyester, all commissioned in 1962-63, except L 9520 in 1964. Built by "Le Conte".

L 9518 *8/1978, Leo van Ginderen*

SURVEY SHIPS

1 "TYDEMAN" CLASS (HYDROGRAPHIC/OCEANOGRAPHIC SHIP)

Name	*No.*	*Builders*	*Commissioned*
TYDEMAN	A 906	Scheepswerf en Machine Fabriek "de Merwede"	10 Nov 1976

Displacement, tons: 2 977
Dimensions, feet (metres): 295·9 × 47·2 × 15·7 *(90·2 × 14·4 × 4·8)*
Aircraft: Helicopter deck
Main engines: Diesel-electric; 3 Stork-Werkspoor diesels; 3 690 shp; 1 Paxman V diesel; 485 shp; 1 electric motor; 2 730 shp; 1 shaft
Speed, knots: 15
Range, miles: 15 700 at 10·3 knots; 10 300 at 13·5 knots
Complement: 62 (8 officers, 54 ratings) plus 15 scientists

Ordered in October 1974. Laid down 29 April 1975, launched 18 December 1975. Fitted with bow thruster (450 shp) and active rudder (300 shp). Passive stabilisation tank. Normally operates in North Atlantic.

Cost: £6·7 million (1974).

Technical equipment: Able to operate oceanographic cables down to 7 000 m. Has six laboratories and two container spaces each for 20 ft standard container. Has forward working-deck with wet-hall, midships and after working decks, one 10 ton crane, one 4 ton crane and frames. Diving facilities.
Atlas-Deco 10 echosounders with Edig digitisers; Kelvin-Hughes hull-mounted side-scan sonar; Klein towed side-scan sonar; Elac bow sonar for wreck search trainable in sectors on either bow; Decca Hi-fix 6; digital PDP computer; COMPLOT plotting system.

TYDEMAN *1978, Royal Netherlands Navy (W. Brock)*

2 "BUYSKES" CLASS

Name	*No.*	*Builders*	*Commissioned*
BUYSKES	A 904	Boele's Scheepswerven en Machinefabriek BV, Bolnes	9 Mar 1973
BLOMMENDAL	A 905	Boele's Scheepswerven en Machinefabriek BV, Bolnes	22 May 1973

Displacement, tons: 967 standard; 1 033 full load
Dimensions, feet (metres): 196·6 × 36·4 × 12 *(60 × 11·1 × 3·7)*
Main engines: Diesel-electric; 3 Paxman diesels; 2 100 hp; 1 electric motor; 1 400 hp = 13·5 knots
Range, miles: 3 000 at 11·5 knots
Complement: 43 (6 officers, 37 ratings)

Both designed primarily for hydrographic work but have also limited oceanographic and meteorological capability. They will operate mainly in the North Sea. A data logging system is installed as part of the automatic handling of hydrographic data. They carry two 22 ft survey launches capable of 15 knots and two work-boats normally used for sweeping.

Sonar: Side-scanning and wreck-search.

Technical equipment: HYDRAUT logging system; wire-drags, normal echo-sounders.

BUYSKES *5/1980, J. L. M. van der Burg*

SERVICE FORCES

2 "POOLSTER" CLASS (FAST COMBAT SUPPORT SHIPS)

Name	*No.*	*Builders*	*Commissioned*
ZUIDERKRUIS	A 832	Verolme Shipyards, Albasserdam	27 June 1975
POOLSTER	A 835	Rotterdamse Droogdok Mij	10 Sep 1964

Displacement, tons: 16 800 full load; 16 900 *(Zuiderkruis)*
Measurement, tons: 10 000 deadweight
Dimensions, feet (metres): 556 × 66·7 × 27 *(169·6 × 20·3 × 8·2)*
(Zuiderkruis 561 oa *(171·1))*
Aircraft: Capacity: 5 helicopters (normally carry 1 Wasp/Lynx)
Guns: 2—40 mm *(Poolster)*; 2—20 mm *(Zuiderkruis)*
Main engines: 2 turbines; 22 000 shp = 21 knots *(Poolster)*
2 Werkspoor diesels; 21 000 hp = 21 knots *(Zuiderkruis)*
Complement: 185 (see note)

Poolster laid down on 18 September 1962. Launched on 16 October 1963. Trials mid-1964. Helicopter deck aft. Funnel heightened by 4·5 m.
Zuiderkruis ordered October 1972. Laid down 16 July 1973, launched 15 October 1974. Completed refit February 1981 and recommissioned with 18 female members of her crew, a new experiment for the Netherlands.
Both carry A/S weapons for helicopters.

Radar: Kelvin Hughes navigation set.

Sonar: Hull-mounted set. CWE 10 *(Poolster)*.

POOLSTER *6/1980, J. L. M. van der Burg*

TRAINING SHIPS

Name	*No.*	*Builders*	*Commissioned*
ZEEFAKKEL	A 903	J. & K. Smit, Kinderdijk	22 May 1951

Displacement, tons: 355 standard; 384 full load
Dimensions, feet (metres): 149 × 24·7 × 6·9 *(45·4 × 7·6 × 2·1)*
Guns: 1—3 in; 1—40 mm
Main engines: 2 diesels; 2 shafts; 640 bhp = 12 knots
Complement: 29

Laid down September 1949, launched 21 July 1950. Former surveying vessel. Now used as local training ship at Den Helder. Re-engined 1980.

Name	*No.*	*Builders*	*Commissioned*
URANIA (ex-*Tromp*)	Y 8050	—	23 Apr 1938

Displacement, tons: 38
Dimensions, feet (metres): 72 × 16·3 × 10 *(22 × 5 × 3·1)*
Main engine: Diesel; 65 hp
Complement: 15

Schooner used for training in seamanship.

Note: *Gelderland* (ex-destroyer) and *Grypskerk* (ex-minesweeper) are used at Amsterdam as harbour training and accommodation ships for the Technical Training establishment. *Soemba* (ex-sloop) used at Den Oever as harbour training and accommodation ship for divers and underwater-swimmers—to be replaced by a shore barracks in the 1980s.

TUGS

Name	*No.*	*Builders*	*Commissioned*
WESTGAT	A 872	Rijkswerf, Willemsoord	10 Jan 1968
WIELINGEN	A 873	Rijkswerf, Willemsoord	4 Apr 1968

Displacement, tons: 185
Dimensions, feet (metres): 90·6 × 22·7 × 7·7 *(27·6 × 6·9 × 2·3)*
Guns: 2—20 mm
Main engine: Bolnes diesel; 750 bhp = 12 knots

Launched on 22 August 1967 and 6 January 1968, respectively. Equipped with salvage pumps and fire fighting equipment. Stationed at Den Helder.

Name	*No.*	*Builders*	*Commissioned*
WAMANDAI	A 870 (ex-*Y 8035*)	Rijkswerf, Willemsoord	1960

Displacement, tons: 159 standard; 201 full load
Dimensions, feet (metres): 89·2 × 21·3 × 7·5 *(27·2 × 6·5 × 2·3)*
Guns: 2—20 mm
Main engine: Diesel; 500 bhp = 11 knots

Launched on 28 May 1960. Equipped with salvage pumps and fire fighting equipment. In the Netherlands Antilles since 1964.

Name	No.	Builders	Commissioned
WAMBRAU	A 871	Rijkswerf, Willemsoord	8 Jan 1957

Displacement, tons: 154 standard; 179 full load
Dimensions, feet (metres): 86·5 × 20·7 × 7·5 *(26·4 × 6·3 × 2·3)*
Guns: 2—20 mm
Main engine: Werkspoor diesel and Kort nozzle; 500 bhp = 10·8 knots

Launched on 27 August 1956. Equipped with salvage pumps and fire fighting equipment. Stationed at Den Helder.

Name	No.	Builders	Commissioned
BERKEL	Y 8037	H. H. Bodewes, Millingen	1956
DINTEL	Y 8038	H. H. Bodewes, Millingen	1956
DOMMEL	Y 8039	H. H. Bodewes, Millingen	1957
IJSSEL	Y 8040	H. H. Bodewes, Millingen	1957

Displacement, tons: 139 standard; 163 full load
Dimensions, feet (metres): 82 × 20·5 × 7·3 *(25 × 6·3 × 2·2)*
Main engine: Werkspoor diesel and Kort nozzle; 500 bhp

Harbour tugs specially designed for use at Den Helder.

There are also four small harbour tugs—Y 8014 (75 tons), Y 8016 (43 tons), Y 8017 (43 tons), Y 8028 (70 tons).

ACCOMMODATION SHIP

(See note under Training Ships)

Cornelis Drebbel is the name of the "Boatel"—775 tons, length 206·7 ft, beam 38·7 ft, draught 3·6 ft, complement 200, cost 3m guilders. Ordered in 1969 from Scheepswerf Voorwaarts at Hoogezand, launched on 19 November 1970 and completed in 1971. Serves as accommodation vessel for crews of ships refitting at private yards in the Rotterdam area.

AUXILIARIES

1 TORPEDO TENDER

Name	No.	Builders	Commissioned
MERCUUR (ex-*Onverschrokken*, ex-*AM 483*)	A 856 (ex-*M 886*)	Peterson Builders, Wisconsin	22 July 1954

Of Ex-US "Aggressive" class. Details in Mine Warfare section.

MERCUUR *8/1978, Michael D. J. Lennon*

1 TORPEDO TRIALS SHIP

Name	No.	Builders	Commissioned
VAN BOCHOVE	A 923	Zaanlandse Scheepsbouw Mij, Zaandam	Aug 1962

Displacement, tons: 140
Dimensions, feet (metres): 97·2 × 18·2 × 6 *(29·6 × 5·6 × 1·8)*
Main engine: Kromhout diesel; Schottel propeller; 140 bhp = 8 knots
Complement: 8

Ordered October 1961. Launched on 20 July 1962. Has two 21-in *(533 mm)* torpedo tubes.

VAN BOCHOVE *6/1980, J. L. M. van der Burg*

4 DIVING TENDERS

Name	No.	Builders	Commissioned
ARGUS	A 847	Rijkswerf, Willemsoord	1939
TRITON	A 848	Rijkswerf, Willemsoord	4 Apr 1964
NAUTILUS	A 849	Rijkswerf, Willemsoord	20 Apr 1965
HYDRA	A 850	Rijkswerf, Willemsoord	20 Apr 1965

Displacement, tons: 44 *(Argus)*; 67 (remainder)
Dimensions, feet (metres): 75·4 × 15·4 × 3·3 *(23 × 4·7 × 1) (Argus)*; 76 × 16·4 × 4·6 *(23·2 × 5 × 1·4)* (remainder)
Main engine: Diesel; 144 hp = 8 knots *(Argus)*, 117 hp = 9 knots (remainder)
Complement: 8

DREG IV A 920

Displacement, tons: 46 standard; 48 full load
Dimensions, feet (metres): 65·7 × 15·1 × 4·9 *(20 × 4·6 × 1·5)*
Main engine: 120 hp = 9·5 knots
Complement: 10

Former survey launch used for communication duties in the Rotterdam area.

1 FUEL OIL LIGHTER

PATRIA Y 8536

Dimensions, feet (metres): 202·2 × 26·5 × — *(61·6 × 8·1 × —)*
Main engine: Bolnes diesel; 300 hp
Capacity, tons: 827

Built in 1963 by H. H. Bodewes, Mallingen a/d Rijen. Based at Den Helder and used for transport from Rotterdam and bunkering. Purchased 1978.

1 FUEL LIGHTER

Y 8538

Built in 1955.

1 WATER CARRIER

Y 8480

Built in 1950.

1 SMALL TRANSPORT (CARGO)

Y 8500

Built in 1953.

1 DIVING TRAINING CRAFT

Y 8512

Built in 1947.

2 SMALL FLOATING DOCKS

Y 8678

Of 131·3 × 29·6 × 12·4 ft. Built in 1949. Of 420 tons capacity. At Willemsoord.

Y 8699

Of 131·3 × 34·9 × 13 ft. Built in 1960. Of 450 tons capacity. At Willemsoord.

1 FLOATING POWER STATION

Y 8676

Built in 1962. Self-propelled.

In addition non-self-propelled craft include Y 8514, floating crane built in 1974 and about 40 others including tank-cleaning vessels, barges etc.

NEW ZEALAND

Ministerial

Minister of Defence:
David S. Thompson, MC, ED, MP

Headquarters' Appointments

Chief of Naval Staff:
Rear-Admiral K. M. Saull
Deputy Chief of Naval Staff:
Commodore C. J. Steward

The command and control of the three New Zealand Services is vested in the Chief of Defence Staff who exercises this authority through the three Service Chiefs of Staff. Command of sea-going ships, the naval base and support facilities is delegated to Commodore (Auckland).

Diplomatic Representation

Naval Attaché in Bangkok: [1]
Captain I. M. McGibbon
Head of New Zealand Defence Liaison Staff, London and Senior Naval Liaison Officer:
Commodore J. O'H. Tobin
Deputy Head of New Zealand Defence Staff, Washington and Naval Attaché:
Captain L. J. Tempero

Personnel

(a) January 1980: 2 732 officers and ratings
January 1981: 2 840 officers and ratings
(b) Voluntary service
(c) Reserve: 373 RNZNVR

Base

Auckland (HMNZS *Philomel*)

Prefix to Ships' Names

HMNZS

Strength of the Fleet

Type	*Active*	*Building*
Frigates	4	—
Large Patrol Craft	4	—
Survey Ship	1	—
Survey Craft	2	—
Research Vessel	1	—
Tender	1	—
Tug	1	—
HDMLs	5	—

Mercantile Marine

Lloyd's Register of Shipping:
122 vessels of 263 543 tons gross

DELETIONS

Note: Some names have been re-allocated.

Corvettes

1976 *Inverell, Kiama* (Sep)

Patrol Craft

1975 *Kahawai, Mako, Parore, Tamure* (HDMLs)
1980 *Manga*

Survey Ship

1974 *Lachlan* (Dec)

Tug

1979 *Manawanui*

PENNANT LIST

Frigates

F 55	Waikato
F 111	Otago
F 148	Taranaki
F 421	Canterbury

Light Forces

P 3552	Paea
P 3563	Kuparu
P 3564	Koura
P 3565	Kahawai
P 3566	Mako
P 3568	Pukaki
P 3569	Rotoiti
P 3570	Taupo
P 3571	Hawea

Surveying Vessels

A 06	Monowai
A 07	Tarapunga
A 08	Takapu

Research Vessel

A 2	Tui

FRIGATES

1 "LEANDER" and 1 "BROAD-BEAMED LEANDER" CLASSES

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
WAIKATO	F 55	Harland & Wolff Ltd, Belfast	10 Jan 1964	18 Feb 1965	16 Sep 1966
CANTERBURY	F 421	Yarrow Ltd, Clyde	12 Apr 1969	6 May 1970	22 Oct 1971

Displacement, tons: 2 580 standard; 3 035 full load *Waikato;* 2 474 standard; 2 945 full load *Canterbury*
Dimensions, feet (metres): 372 × 41 (*Waikato*); 43 (*Canterbury*) × 18
(113·4 × 12·5 (Waikato); 13·2 (Canterbury) × 5·4)
Aircraft: 1 Wasp helicopter
Missiles: SAM; Est. 12 Seacat (one quad launcher)
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6);
2—20 mm/70 (single L70)
A/S weapons: 2 triple Mk 32 Mod 5 A/S torpedo tubes
Main engines: 2 sets dr geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox
Speed, knots: 30 *Waikato;* 28 *Canterbury*
Complement: 248 (16 officers, 232 ratings) *Waikato;* 264 (23 officers, 241 ratings) *Canterbury*

Waikato, ordered on 14 June 1963, trials in the UK until spring 1967, arrived in New Zealand waters in May 1967. *Canterbury* was ordered in August 1968, arrived in New Zealand in August 1972.
Extensions fitted to funnel uptakes.
Waikato completed long refit and modernisation July 1977.

Aircraft: Hangar has been enlarged to take Lynx although that aircraft has not yet been ordered.

Radar: Search: Type 965.
Tactical: Type 993.
Fire control: MRS 3 System and I Band.

WAIKATO *1979, Royal New Zealand Navy*

CANTERBURY *8/1978, John Mortimer*

2 "ROTHESAY" CLASS (TYPE 12)

Name	No.	Builders	Laid down	Launched	Commissioned
OTAGO	F 111	J. I. Thornycroft & Co Ltd, Woolston, Southampton	1957	11 Dec 1958	22 June 1960
TARANAKI	F 148	J. Samuel White & Co Ltd, Isle of Wight	1958	19 Aug 1959	28 Mar 1961

Displacement, tons: 2 144 standard; 2 557 full load
Dimensions, feet (metres): 370 × 41 × 17·3 *(112·8 × 12·5 × 5·3)*
Missiles: SAM; Est. 12 Seacat (quad launcher) *(Otago)*
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6); 1—40 mm/60 Bofors *(Taranaki only)*; 2—20 mm/70
A/S weapons: 6 (2 triple) Mk 32 Mod 5 A/S torpedo tubes (see *Class* note)
Main engines: 2 sets dr geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox
Speed, knots: 30
Complement: 243 (13 officers, 230 ratings) (see *Class* note)

Taranaki was ordered direct (announced by J. Samuel White & Co on 22 February 1957). For *Otago* New Zealand took over the contract (officially stated on 26 February 1957) for HMS *Hastings* originally ordered from John I. Thornycroft & Co in February 1956 for the Royal Navy. Both vessels are generally similar to the "Rothesay" class in the Royal Navy, but were modified to suit New Zealand conditions and have had the most necessary "Rothesay" class alterations and additions. *Otago* has had enclosed foremast since 1967 refit; *Taranaki* was similarly fitted during 1969.

Class: *Taranaki* refitted 1978-79 and reduced to "Resources Protection and Sea Training" role. Mortar Mk 10 and Seacat removed, 40/60 Bofors (single) fitted and ship's company reduced to 140. Recommissioned 1 March 1979.

Radar: Search: Type 993. Type 277 *(Otago only)*.
Fire control: Type 275.

OTAGO *1979, Royal New Zealand Navy*

TARANAKI *1979, Royal New Zealand Navy*

SURVEY VESSELS

Name	No.	Builders	Commissioned
MONOWAI (ex-*Moana Roa*)	A 06	Grangemouth D.Y.	Aug 1960

Displacement, tons: 3 903 full load
Dimensions, feet (metres): 298 × 46 × 17 *(90·8 × 14 × 5·2)*
Aircraft: 1 helicopter
Main engines: 2 Sulzer 7-cyl diesels; 3 640 hp = 14 knots
Oil fuel, tons: 510
Range, miles: 12 000 cruising
Complement: 126 (11 officers, 115 ratings)

Previously employed on the Cook Islands service. Taken over 1974—put out to tender in early 1975 for conversion which included an up-rating of the engines, provision of a helicopter deck and hangar and fitting of cp propellers and a bow thruster. Conversion undertaken by Scott Lithgow Drydocks Ltd. Commissioned 4 October 1977.
May be used for training when available.

MONOWAI *1979, Royal New Zealand Navy*

2 INSHORE SURVEY CRAFT

Name	No.	Builders	Commissioned
TARAPUNGA	A 07	Whangarei Engineering Ltd	9 Apr 1980
TAKAPU	A 08	Whangarei Engineering Ltd	8 July 1980

Displacement, tonnes: 115
Dimensions, feet (metres): 88·6 × 20 × 10 *(27 × 6·1 × 3)*
Main engines: 2 diesels; 710 bhp; 2 shafts = 12 knots
Complement: 12 (2 officers, 10 ratings)

On 30 November 1977 the NZ Cabinet approved the construction of two survey craft. Their equipment has been specifically designed to work with *Monowai*.

TAKAPU *1980, Iain G. B. Lovie*

LIGHT FORCES

4 "LAKE" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
PUKAKI	P 3568	Brooke Marine, Lowestoft, England	24 Feb 1975
ROTOITI	P 3569	Brooke Marine, Lowestoft, England	24 Feb 1975
TAUPO	P 3570	Brooke Marine, Lowestoft, England	29 July 1975
HAWEA	P 3571	Brooke Marine, Lowestoft, England	29 July 1975

Displacement, tons: 105 standard; 134 full load
Dimensions, feet (metres): 107 × 20 × 11·8 *(32·8 × 6·1 × 3·6)*
Guns: 2—12·7 mm M2 MGs (fwd)
Main engines: 2 Paxman 12YJCM diesels; 3 000 bhp = 25 knots
Complement: 21 (3 officers, 18 ratings)

The first to complete, *Pukaki*, was finished on 20 July 1974. She and *Rotoiti* were shipped to New Zealand in November 1974. Launch dates—*Hawea*, 9 September 1974; *Pukaki*, 1 March 1974; *Rotoiti*, 8 March 1974; *Taupo*, 25 July 1974.

PUKAKI *1976, Royal New Zealand Navy*

5 HDML TYPE

PAEA (ex-Q 1184) P 3552
KUPARU (ex-*Pegasus*, ex-Q 1349) P 3563
KOURA (ex-*Toroa*, ex-Q 1350) P 3564
KAHAWAI (ex-*Takapu*, ex-Q 1188) P 3565
MAKO (ex-*Tarapunga*, (ex-Q 1387) P 3566

Displacement, tons: 46 standard; 54 full load
Dimensions, feet (metres): 72 × 16 × 5·5 *(22 × 4·9 × 1·7)*
Guns: Armament removed
Main engines: 2 diesels; 2 shafts; 320 bhp = 12 knots
Complement: 9

All built in various yards in the USA and Canada and shipped to New Zealand. All have been converted with lattice masts surmounted by a radar aerial.

HDML *1973, Royal New Zealand Navy*

TUG

ARATAKI

Length, feet (metres): 75 *(22·9)*
Main engine: Diesel; 1 shaft; 320 hp

Steel tug used for dockyard work. Built by Steel Ships Ltd, Auckland in 1947.

RESEARCH VESSEL

Name	*No.*	*Builders*	*Commissioned*
TUI (ex-USS *Charles H. Davis, T-AGOR 5*)	A 2	Christy Corporation, Sturgeon Bay, Wis.	25 Jan 1963

Displacement, tons: 1 200 standard; 1 380 full load
Dimensions, feet (metres): 208·9 × 37·4 × 15·3 *(63·7 × 11·3 × 4·7)*
Main engine: Diesel-electric; 1 shaft; 10 000 hp = 12 knots
Complement: 5 officers, 33 ratings, 15 scientists

Oceanographic research ship. Laid down on 15 June 1961, launched on 30 June 1962. On loan from the USA since 28 July 1970 for five years. Commissioned in the RNZN on 11 September 1970. Announced that she will remain in the RNZN until at least 1983. Operates for NZ Defence Research Establishment on acoustic research. Bow propeller 175 hp.

Appearance: Port after gallows removed—new gallows at stern—cable reels on quarterdeck and amidships—light cable-laying gear over bow.

TUI *1979, Royal New Zealand Navy*

1 DIVING TENDER

Name	*No.*	*Builders*	*Commissioned*
MANAWANUI	—	Whangarei Engineering Ltd	28 May 1979

Displacement, tonnes: 110
Dimensions, feet (metres): 88·6 × 26·1 × 10 *(27 × 8 × 3)*
Main engines: 2 Cummins diesels; 710 bhp; 2 shafts = 12·4 knots
Complement: 16

NICARAGUA

Ministerial

Minister of Defence:
Heberto Sanchez

Personnel

1981: 200 officers and men

General

All craft operated by Marine Section of the Guardia Naçional

Ports

Carinto, Puerto Cabezas, Puerto Somaza, San Juan del Sur

New Construction

Bazán of Spain has proposed the building of several 150 ton FAC of Lince design.

Mercantile Marine

Lloyd's Register of Shipping:
17 vessels of 15 726 tons gross

PATROL CRAFT

4 "DABUR" CLASS

GC 10, 11, 12 +1

Displacement, tons: 35 full load
Dimensions, feet (metres): 64·9 × 18 × 5·8 *(19·8 × 5·5 × 1·8)*
Guns: 2—20 mm; 2 (twins) ·5 MGs
Main engines: 2 geared diesels; 1 920 shp; 2 shafts = 21·8 knots
Range, miles: 1 200 at 17 knots
Complement: 6

Delivered by Israel April 1978 (first pair), May 1978 (second pair).

1 SEWART TYPE

RIO KURINGWAS GC 7

Displacement, tons: 60
Dimensions, feet (metres): 85 × 18·8 × 5·9 *(25·9 × 5·6 × 1·8)*
Guns: 3—7·62 mm MGs
Main engines: 3 General Motors diesels; 3 shafts; 2 000 shp = 26·5 knots
Range, miles: 1 000 at 20 knots
Complement: 10

Delivered July 1972.

RIO CRUTA

Length, feet (metres): 85 *(25·9)*
Gun: 1—20 mm (bow)
Main engines: Diesels; speed = 9 knots
Complement: 11

Wooden hulled.

4 "90 ft" LARGE PATROL CRAFT

Wooden hulled. Of 27·5 metres.

2 "80 ft" LARGE PATROL CRAFT

Wooden hulled. Of 24·4 metres.

1 "75 ft" LARGE PATROL CRAFT

Built in 1925 so present existence doubtful. Was used for training. Of 22·9 metres.

1 "40 ft" UTILITY CRAFT

Acquired in 1962.

1 "26 ft" COASTAL PATROL CRAFT

Armed with a 20 mm gun, capable of 25 knots and with a crew of six. Of 7·9 metres.

1 Ex-US "LCM 6" CLASS

Acquired in 1970.

NIGERIA

Ministerial

Minister of Defence:
Chief Akanbi Oniyangi

Headquarters' Appointments

Chief of the Naval Staff:
Rear-Admiral A. A. Aduwo
Chief of Operations:
Captain M. A. H. Nyako
Chief of Personnel:
Commodore G. W. Kanu
Chief of Material:
Commodore O. Olumidt
Chief of Logistics:
Commodore Victor Oladipo Oduwaiye

Commands

Flotilla Command:
Commodore A. A. Aikhomu
Western Naval Command:
Commodore P. S. Koshoni
Eastern Naval Command:
Captain F. S. Buba

Diplomatic Representation

Naval Adviser in Delhi:
Captain Ebenge Tom Okpo
Naval Adviser in London:
Commander P. A. Hemben

Personnel

(a) 1981: 496 officers and 3 553 ratings
(b) Voluntary service

Bases

Apapa—Lagos:
Western Naval Command;
Dockyard, Training Schools
New dockyard under construction

Calabar:
Eastern Naval Command

(Naval schools to be at Lagos, Port Harcourt and Calabar)

Prefix to Ships' Names

NNS

Strength of the Fleet

Type	*Active*	*Building*
Frigates	1	1
Corvettes	4	—
Fast Attack Craft (Missile)	6	—
Large Patrol Craft	12	—
Coastal Patrol Craft	18	—
Landing Ships	2	—
Survey Ship	1	—
Training Ship	1	—
Tugs	3	—
Launches	49	—
Police Craft	14	—

Port Security Police

A separate force of 1 500 officers and men.

Mercantile Marine

Lloyd's Register of Shipping:
116 vessels of 498 202 tons gross

DELETIONS

Light Forces

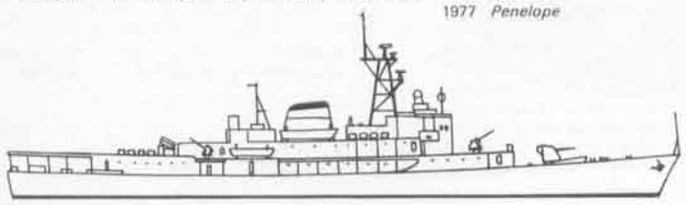
1975 3 ex-Soviet "P6" class; *Kaduna, Ibadan II* ("Ford" class)

Survey Ships

1975 *Pathfinder*
1977 *Penelope*

Service Forces

1978 *Lokoja*



NIGERIA

LANA

FRIGATES

1 BLOHM AND VOSS MEKO TYPE 360

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ARADU	F 89	Blohm and Voss, Hamburg	1 Dec 1978 (first section) 2 May 1979 (on slip)	25 Jan 1980	1981

Displacement, tons: 3 630 full load
Dimensions, feet (metres): 413 × 49·2 × 14·1 *(125·6 × 15 × 4·3)*
Aircraft: 1 helicopter
Missiles: SSM: 8—Otomat (2 quads); SAM: 8—Aspide (octuple launcher)
Guns: 1—127 mm/54 OTO Melara Compact; 8—40 mm/70 Breda Bofors (twins)
A/S weapons: 6—Plessey A/S torpedo tubes (triple); DCs
Main engines: CODOG; 2 Rolls-Royce Olympus TM3B gas turbines; 50 000 hp; 2 MTU Type 20 V 956 TB92 diesels; 10 000 hp; 2 Kamewa five-bladed cp propellers
Speed, knots: 30·5
Range, miles: 6 500 cruising
Complement: 200 (accommodation for 237)

Name: Originally *Republic*; renamed *Aradu* late 1980.

Radar: Search: Plessey ASW-5.
Search/fire control: WM 25; one STIR.
Navigation: Decca 1226.
IFF/SIF; Two Decca.

MEKO TYPE 360 *1978, Blohm and Voss*

Rockets: Two Breda 105 mm SCLAR.

Sonar: One HSA-PHS 32 (hull-mounted).

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
NIGERIA	F 87	Wilton-Fijenoord NV, Netherlands	9 Apr 1964	12 Apr 1965	16 Sep 1965

Displacement, tons: 1 724 standard; 2 000 full load
Dimensions, feet (metres): 360·2 × 37 × 11·5 *(109·8 × 11·3 × 3·5)*
Guns: 2—4 in *(102 mm)* (1 twin); 4—40 mm (single)
A/S weapon: 1—triple-barrelled Squid mortar
Main engines: 4 MAN diesels; 2 shafts; 16 000 bhp
Speed, knots: 26
Range, miles: 3 500 at 15 knots
Complement: 216

Original cost £3·5 million. Helicopter platform aft. Refitted at Birkenhead, 1973. Further refit completed at Schiedam October 1977.

Radar: Type 293/AWS 4.

Sonar: Removed.

NIGERIA *9/1977, Wright and Logan*

CORVETTES

2 Mk 9 VOSPER THORNYCROFT TYPE

Name	No.	Builders	Commissioned
ERIN'MI	F 83	Vosper Thornycroft Ltd	Jan 1980
ENYIMIRI	F 84	Vosper Thornycroft Ltd	May 1980

Displacement, tons: 850 full load
Dimensions, feet (metres): 226 × 31·5 × 9·8 *(69 × 9·6 × 3)*
Missiles: SAM; Est. 12 Seacat (triple launcher)
Guns: 1—76 mm/62 Mod 6 Compact; 1—40 mm L70 Bofors; 2—20 mm Oerlikon
A/S weapon: 1 Bofors rocket launcher (twin)
Main engines: 4 MTU 20V 956 TB 92 diesels; 17 600 shp; 2 shafts
Speed, knots: 27
Range, miles: 2 200 at 14 knots
Complement: 90 (including flag officer)

Ordered from Vosper Thornycroft 22 April 1975. *Erin'mi* laid down 14 October 1975 and launched 20 January 1977. *Enyimiri* laid down 11 February 1977 and launched 9 February 1978. In 1979 both had their funnels heightened.

Engineering: Two Kamewa 3-bladed cp propellers, 360 rpm. Three 260 kW alternators.

Radar: Search: Plessey AWS 2.
Fire control: HSA WM 24.
Navigation: Decca TM 1226.

Sonar: Plessey PMS 26.

ENYIMIRI *8/1980, Michael D. J. Lennon*

2 Mk 3 VOSPER THORNYCROFT TYPE

Name	No.	Builders	Commissioned
DORINA	F 81	Vosper Thornycroft	June 1972
OTOBO	F 82	Vosper Thornycroft	Nov 1972

Displacement, tons: 500 standard; 650 full load
Dimensions, feet (metres): 202 × 31 × 11·33 *(61·6 × 9·5 × 3·5)*
Guns: 2—4 in (1 twin) UK Mk 19; 2—40 mm Bofors (single) 2—20 mm
Main engines: 2 MAN diesels; 8 000 bhp; 2 shafts = 22 knots
Range, miles: 3 000 at 14 knots
Complement: 67 (8 officers and 59 ratings)

Ordered on 28 March 1968. *Dorina* laid down 26 January 1970, launched 16 September 1970. *Otobo* laid down 28 September 1970, launched 25 May 1971. Both refitted by Vosper Thornycroft 1975.

Radar: Air search: Plessey AWS 1.
Fire control: HSA M22.
Navigation: Decca TM626.

Sonar: Plessey MS 22.

DORINA *9/1976, Wright and Logan*

LIGHT FORCES

3 "LÜRSSEN FPB-57" CLASS (FAST ATTACK CRAFT—MISSILE)

EKPE P 178 **DAMISIA** P 179 **AGU** P 180

Displacement, tons: 410 full load
Dimensions, feet (metres): 190·6 × 24·9 × 8·9 *(58·1 × 7·6 × 2·7)*
Missiles: SSM; 4—Otomat
Guns: 1—76 mm; 2—40 mm/70 Breda (twin); 4 Emerlek 30 mm (twins)
Main engines: 4 MTU diesels; 16 000 shp; 2 shafts = 38 knots
Range, miles: 1 300 at 30 knots
Complement: 40

Ordered from Lürssen, Vegesack late 1977. To carry HSA WM 28 fire control.

DAMISIA *11/1980, Werner Globke*

3 "COMBATTANTE IIIB" CLASS (FAST ATTACK CRAFT—MISSILE)

SIRI P 181 **AYAM** P 182 **EKUN** P 183

Displacement, tons: 385 standard; 430 full load
Dimensions, feet (metres): 184 × 26 × 7 *(56·2 × 8 × 2·1)*
Missiles: SSM; 4—Exocet
Guns: 1—76 mm OTO Melara Compact; 2—40 mm/70 Breda (twin); 4—30 mm (twins) Emerlek (bridge)
Main engines: 4 16-cyl MTU diesels; 20 000 shp; 4 shafts = 37 knots
Range, miles: 2 000 at 15 knots
Complement: 42

A 50 million franc order placed with CMN, Cherbourg in late 1977. Thomson CSF fire control. *Siri* laid down 15 March 1979, launched 3 June 1980.

Fire control: Two CSEE Panda optical directors.

"COMBATTANTE IIIB" Class (after gun to be replaced by 40 mm) *CMN*

4 BROOKE MARINE TYPE (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
MAKURDI	P 167	Brooke Marine, Lowestoft	14 Aug 1974
HADEJIA	P 168	Brooke Marine, Lowestoft	14 Aug 1974
JEBBA	P 171	Brooke Marine, Lowestoft	29 Apr 1977
OGUTA	P 172	Brooke Marine, Lowestoft	29 Apr 1977

Displacement, tons: 115 standard; 143 full load
Dimensions, feet (metres): 107 × 20 × 11·5 *(32·6 × 6·1 × 3·5)*
Guns: 2—40 mm; 2 Rocket flare launchers (to be fitted with twin 30 mm Emerlek in place of 40 mm)
Main engines: 2 Paxman 12-cyl Ventura diesels; 3 000 bhp; 2 shafts = 20·5 knots
Complement: 21

First pair ordered in 1971. Second pair ordered 30 October 1974, laid down 20 January 1975. Launch dates—*Hadejia*, 25 May 1974; *Makurdi*, 21 March 1974; *Jebba*, 1 December 1976; *Oguta* 17 January 1977. Completion dates for second pair 11 February 1977 and 18 March 1977 respectively. Tenders were invited early 1979 for modifications to *Makurdi* and *Hadejia*.

HADEJIA *9/1974, C. and S. Taylor*

4 Ex-BRITISH "FORD" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
BENIN (ex-HMS *Hinksford*)	P 03	Richards, Lowestoft	1955
BONNY (ex-HMS *Gifford*)	P 04	Scarr, Hessle	1954
ENUGU	P 05	Camper & Nicholson's, Gosport	14 Dec 1961
SAPELE (ex-HMS *Dubford*)	P 09	J. Samuel White, Cowes	1953

Displacement, tons: 120 standard; 160 full load
Dimensions, feet (metres): 117·2 × 20 × 5 *(35·7 × 6·1 × 1·5)*
Guns: 1—40 mm Bofors; 2—20 mm Oerlikon
Main engines: Davey Paxman diesels; Foden engine on centre shaft; 1 100 bhp = 18 knots
Complement: 26

Enugu was the first warship built for the Nigerian Navy. Ordered in 1960. Sailed from Portsmouth for Nigeria on 10 April 1962. Fitted with Vosper roll damping fins. *Hinksford* purchased from the UK on 1 July 1966 and transferred at Devonport on 9 September 1966. *Dubford* and *Gifford* were purchased from the UK during 1967-68.

BENIN *1970, Nigerian Navy*

4 ABEKING AND RASMUSSEN TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
ARGUNGU	P 165	Abeking & Rasmussen	Aug 1973
YOLA	P 166	Abeking & Rasmussen	Aug 1973
BRAS	P 169	Abeking & Rasmussen	Mar 1976
EPE	P 170	Abeking & Rasmussen	Mar 1976

Displacement, tons: 90
Dimensions, feet (metres): 95·1 × 18 × ·2 *(29 × 5·5 × 1·6)*
Guns: 4—30 mm Emerlek (twins)
Main engines: 2 Paxman 8-cyl Ventura diesels; 2 200 hp; 2 shafts = 20 knots
Complement: 25

Launch dates—*Argungu,* 9 July 1973. *Yola,* 12 June 1973; *Bras,* 12 January 1976; *Epe,* 9 February 1976. Rearmed in 1978.

YOLA (old armament) *10/1974, Michael D. J. Lennon*

1 FAIREY "TRACKER"

Displacement, tons: 31
Dimensions, feet (metres): 63·1 × 16·3 × 4·8 *(19·3 × 5 × 1·5)*
Gun: 1—20 mm
Main engines: 2 diesels; 2 shafts; 1 290 hp = 24 knots
Range, miles: 650 at 20 knots
Complement: 11

Delivered February 1978 for fishery protection.

2 FAIREY "SPEAR"

Displacement, tons: 4·3
Dimensions, feet (metres): 29·8 × 9·2 × 2·6 *(9·1 × 2·8 × 0·8)*
Main engines: 2 diesels = 25 knots

Delivered 1978 for fishery protection.

15 COASTAL PATROL CRAFT

Of 59·7 ft *(18·2 m)* ordered from Intermarine, Italy.

AMPHIBIOUS FORCES

2 FDR TYPE RO-RO 1300 (LSTs)

Name	*No.*	*Builders*	*Commissioned*
AMBE	LST 1312	Howaldtswerke, Hamburg	Apr 1979
OFIOM	LST 1313	Howaldtswerke, Hamburg	July 1979

Displacement, tons: 1 470 standard; 1 750 full load
Dimensions, feet (metres): 285·4 × 45·9 × 7·5 *(87 × 14 × 2·3)*
Guns: 1—40 mm; 2—20 mm (single)
Main engines: 2 MTU diesels; 4 shafts; 6 700 hp = 17 knots
Range, miles: 5 000 at 10 knots
Complement: 56

Ordered September 1976. Built to a design prepared for the FGN. *Ambe* laid down 3 March 1978 and launched 7 July 1978. *Ofiom* laid down 15 September 1978 and launched 7 December 1978.

Capacity: 460 tons and 220 troops long haul, 540 troops short haul or 1 000 troops seated. Can carry five 40 ton tanks. Have a 19 metre bow ramp and a 4 metre stern ramp.

OFIOM *8/1980, Michael D. J. Lennon*

SURVEY SHIP

Name	*No.*	*Builders*	*Commissioned*
LANA	A 498	Brooke Marine, Lowestoft	15 July 1976

Displacement, tons: 800 standard; 1 100 full load
Dimensions, feet (metres): 189 × 37·5 × 12 *(57·6 × 11·4 × 3·7)*
Main engines: 4 Paxman 6-cyl Ventura diesels; 2 shafts; 3 000 bhp = 16 knots
Range, miles: 4 500 at 12 knots
Complement: 52

Ordered in late 1973, laid down 5 April 1974, launched 4 March 1976. Sister to Royal Navy "Bulldog" class.

SERVICE FORCES

2 TUGS

Name	*No.*	*Builders*	*Commissioned*
RIBADU	A 486	Oelkers, Hamburg	19 May 1973

Displacement, tons: 147
Dimensions, feet (metres): 93·5 × 23·6 × 12·1 *(28·5 × 7·2 × 3·7)*
Main engines: Diesel; 800 shp = 12 knots

Fitted for fire fighting and salvage work.

Name	*No.*	*Builders*	*Commissioned*
KAIN JI-DAM	—	De Hoop S.Y. Hardinxveld, Netherlands	1978

Of 90 tons gross. Launched 15 November 1977.

1 TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
RUWAN YARO (ex-*Ogina Brereton*)	A 497	Van Lent, Netherlands	1976

Displacement, tons: 400
Dimensions, feet (metres): 144·6 × 26·2 × 12·8 *(44·2 × 8 × 3·9)*
Main engines: 2 Deutz diesels; 3 000 hp = 17 knots
Range, miles: 3 000 at 15 knots
Complement: 42

Originally built in 1975 as a yacht. Used as navigational training vessel. Acquired 1976.

48 LAUNCHES

Includes 22 of 7 metres, two 10 metre personnel launches, fifteen 22 ft work-boats and five 18 ft work-boats, all by Fairey Allday Marine Ltd, UK and four 8·2 metre whalers by Cheverton Work-Boats, UK.

1 LAUNCH

MURTALA MUHAMED

Of 12·8 tons. Launched 14 August 1976 by Akerboom, Netherlands. Completed 28 September 1976.

POLICE CRAFT

1 "P 1200" TYPE (COASTAL PATROL CRAFT)

Displacement, tonnes: 9·7
Dimensions, feet (metres): 39 × 13·4 × 3·5 *(11·9 × 4·1 × 1·1)*
Main engines: 2 General Motors 8V71TI diesels; 480 shp = 27 knots
Range, miles: 240

GRP hull. Delivered February 1981 by Watercraft Ltd, Shoreham, Sussex.

5 "8 METRE" TYPE (COASTAL PATROL CRAFT)

Displacement, tonnes: 3·2
Dimensions, feet (metres): 27 × 7·5 × 2·7 *(8·1 × 2·6 × 0·8)*
Main engines: 2 Volvo diesels; 300 bhp = 26 knots

Trihedral GRP hulls. Delivered February 1981 by Watercraft Ltd, Shoreham, Sussex.

8 VOSPER THORNYCROFT TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 15
Dimensions, feet (metres): 34 × 10 × 2·8 *(10·4 × 3·1 × 0·9)*
Gun: 1 MG
Main engines: 2 diesels; 290 hp = 19 knots
Complement: 6

Ordered for Nigerian Police March 1971, completed 1971-72. GRP hulls.

NORWAY

Ministerial

Minister of Defence:
Thorvald Stoltenberg

Headquarters' Appointments

Inspector General Royal Norwegian Navy:
Rear-Admiral R. P. Breivik
Commander Naval Material Command:
Rear-Admiral J. J. Meyer
Commodore Sea Training:
Commodore B. Grimstvedt
Inspector of Norwegian Coast Guard:
Commodore N. Tiltnes
Inspector of Coast Artillery:
Commodore J. H. Hegstad

Diplomatic Representation

Defence Attaché in Bonn:
Colonel B. T. Helland (AF)
Defence Attaché in Helsinki:
Lieutenant Colonel F. Nanseth (A)
Defence Attaché in London:
Colonel C. O. Langlie (A)
Defence Attaché in Moscow:
Captain H. Overgaard (N)
Defence Attaché in Ottawa:
Lieutenant Colonel H. K. Halvorsen (A)
Defence Attaché in Paris:
Lieutenant Colonel E. C. Klykken (A)
Defence Attaché in Stockholm:
Captain K. Berg (N)
Defence Attaché in Vienna:
Colonel L. Schance (A)
Defence Attaché in Washington:
Lieutenant General K. Bjørge-Hansen (AF)

Personnel

(a) 1980: 8 500 officers and ratings
(Above figures include 1 600 Coast Artillery)
(b) 12-15 months' national service

Naval Bases

Karl Johans Vern (Horten), Haakonsvern (Bergen), Ramsund (Harstad) and Olavsvern (Tromsø)

Prefix to Ships' Names

KNM (Naval)
K/V (Coast Guard)

Coast Artillery

Man numerous coastal forts—all with guns and some with torpedo tubes and/or controlled minefields.

Air Forces

Squadron	*Aircraft*	*Location*	*Duties*
330	10 Sea King Mk 43	Bodø, Banak, Sola, Orland	SAR
333	7 Orion P3B	Andoya	LRMP
337	6 Lynx	Coast Guard vessels/Bardufoss	MP
719 and 720	20 Bell UH-1D	Bodø, Rygge	SAR

Coast Guard

Founded April 1977 with operational control held by Norwegian Defence Command.

Strength of the Fleet

Type	*Active*	*Building*
Submarines—Coastal	15	—
Frigates	5	—
Corvettes	2	—
Fast Attack Craft—Missile	40	—
Fast Attack Craft—Torpedo	8	—
Large Patrol Craft	1	—
Coastal Patrol Craft	2	—
Minelayers	3	—
Minesweepers—Coastal	10	—
LCTs	7	—
Depot Ship	1	—
Auxiliaries	17	—
Coast Guard Vessels	13	—

Mercantile Marine

Lloyd's Register of Shipping:
2 501 vessels of 22 007 490 tons gross

DELETIONS

Notes: (a) The "Tjeld" class have all lost their names, many of which are being taken by the "Hauk" class. The deletion names in the Light Forces for 1979-80 refer to the "Tjeld" class.
(b) In the Coast Guard three new ships (W 320-322) have taken over names of ships deleted.

Light Forces

1978 *Skarv*
1979 *Teist, Lom, Jo, Falk, Sel*
1980 *Hval, Laks, Knurr, Delfin, Geir, Erle*

Training Ship

1974 *Haakon VII*

LCT

1975 *Tjeldsund*

Minelayers

1976 *Gor, Tyr*
1978 *Brage, Uller*

Depot Ship

1977 *Valkyrien*

PENNANT LIST

Submarines

S 300	Ula
S 301	Utsira
S 302	Utstein
S 303	Utvaer
S 304	Uthaug
S 305	Sklinna
S 306	Skolpen
S 307	Stadt
S 308	Stord
S 309	Svenner
S 315	Kaura
S 316	Kinn
S 317	Kya
S 318	Kobben
S 319	Kunna

Frigates and Corvettes

F 300	Oslo
F 301	Bergen
F 302	Trondheim
F 303	Stavanger
F 304	Narvik
F 310	Sleipner
F 311	Aeger

Minesweepers

M 311	Sauda
M 312	Sira
M 313	Tana
M 314	Alta
M 315	Ogna
M 316	Vosso
M 317	Glomma
M 331	Tista
M 332	Kvina
M 334	Utla

Minelayers

N 51	Borgen
N 52	Vidar
N 53	Vale

Light Forces

P 340	Vadsø
P 348	"Tjeld" class
P 357	"Tjeld" class
P 380	"Tjeld" class
P 381	"Tjeld" class
P 387	"Tjeld" class
P 388	"Tjeld" class
P 960	Storm
P 961	Blink
P 962	Glimt
P 963	Skjold
P 964	Trygg
P 965	Kjekk
P 966	Djerv
P 967	Skudd
P 968	Arg
P 969	Steil
P 970	Brann
P 971	Tross
P 972	Hvass
P 973	Traust
P 974	Brott
P 975	Odd
P 976	Pil
P 977	Brask
P 978	Rokk
P 979	Gnist
P 980	Snögg
P 981	Rapp
P 982	Snar
P 983	Rask
P 984	Kvikk
P 985	Kjapp
P 986	Hauk
P 987	Ørn
P 988	Terne
P 989	Tjeld
P 990	Skarv
P 991	Teist
P 992	Jo
P 993	Lom
P 994	Stegg
P 995	Falk
P 996	Ravn
P 997	Gribb
P 998	Geir
P 999	Erle

Amphibious Forces

L 4500	Kvalsund
L 4501	Raftsund
L 4502	Reinsöysund
L 4503	Söröysund
L 4504	Maursund
L 4505	Rotsund
L 4506	Borgsund

Auxiliaries

A 530	Horten
A 533	Norge
HSD 15	Krøttøy
NSD 35	Rotvaer
ØSD 1	Welding
ØSD 2	Wisting
ROS 21	Draug
RSD 23	Fjøløy
TRSD 4	Karlsøy
TSD 1	Tarva
TSD 5	Tautra
VSD 1	Vernøy
VSD 2	Marsteinen
VSD 4	Torpen
VSD 6	Kvarven
VSD 7	Samson
VSD 11	Sarpen
VSD 13	Ramnes

Coast Guard

W 300	Nornen
W 301	Farm
W 302	Heimdal
W 312	Sørfold
W 313	Møgsterfjord
W 314	Stålbas
W 315	Nordsjøbas
W 316	Volstad Jr.
W 317	Lafjord
W 319	Grimsholm
W 320	Nordkapp
W 321	Senja
W 322	Andenes

SUBMARINES

PROJECT 6071

A design contract for a new class of 750/900 ton patrol submarines has been placed with IKL (Lübeck).

15 TYPE 207

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ULA	S 300	Rheinstahl-Nordseewerke, Emden, West Germany	1962	19 Dec 1964	7 May 1965
UTSIRA	S 301	Rheinstahl-Nordseewerke, Emden, West Germany	1963	11 Mar 1965	1 July 1965
UTSTEIN	S 302	Rheinstahl-Nordseewerke, Emden, West Germany	1962	19 May 1965	9 Sep 1965
UTVAER	S 303	Rheinstahl-Nordseewerke, Emden, West Germany	1962	30 June 1965	1 Dec 1965
UTHAUG	S 304	Rheinstahl-Nordseewerke, Emden, West Germany	1962	8 Oct 1965	16 Feb 1966
SKLINNA	S 305	Rheinstahl-Nordseewerke, Emden, West Germany	1963	21 Jan 1966	27 May 1966
SKOLPEN	S 306	Rheinstahl-Nordseewerke, Emden, West Germany	1963	24 Mar 1966	17 Aug 1966
STADT	S 307	Rheinstahl-Nordseewerke, Emden, West Germany	1963	10 June 1966	15 Nov 1966
STORD	S 308	Rheinstahl-Nordseewerke, Emden, West Germany	1964	2 Sep 1966	9 Feb 1967
SVENNER	S 309	Rheinstahl-Nordseewerke, Emden, West Germany	1965	27 Jan 1967	1 July 1967
KAURA	S 315	Rheinstahl-Nordseewerke, Emden, West Germany	1961	16 Oct 1964	5 Feb 1965
KINN	S 316	Rheinstahl-Nordseewerke, Emden, West Germany	1960	30 Nov 1963	8 Apr 1964
KYA	S 317	Rheinstahl-Nordseewerke, Emden, West Germany	1961	20 Feb 1964	15 June 1964
KOBBEN	S 318	Rheinstahl-Nordseewerke, Emden, West Germany	1961	25 Apr 1964	17 Aug 1964
KUNNA	S 319	Rheinstahl-Nordseewerke, Emden, West Germany	1961	16 July 1964	1 Oct 1964

Displacement, tons: 370 standard; 435 dived
Dimensions, feet (metres): 149 × 15 × 14 *(45·2 × 4·6 × 4·3)*
Torpedo tubes: 8—21 in *(533 mm)* (bow)
Main machinery: 2 MB 820 Maybach-Mercedes-Benz (MTU) diesels; 1 200 bhp; electric drive; 1 200 hp; 1 shaft
Speed, knots: 10 surfaced; 17 dived
Complement: 18 (5 officers, 13 men)

It was announced in July 1959 that the USA and Norway would share equally the cost of these submarines. These are a development of IKL Type 205 (West German U4-U8) with increased diving depth. *Svenner*'s second periscope for COs training operations is a metre longer.

Names: *Kobben* was the name of the first submarine in the Royal Norwegian Navy. Commissioned on 28 November 1909.

Sonar: Small dome fitted forward.

SKOLPEN *1979, Royal Norwegian Navy*

FRIGATES

5 "OSLO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
OSLO	F 300	Marinens Hovedverft, Horten	1963	17 Jan 1964	29 Jan 1966
BERGEN	F 301	Marinens Hovedverft, Horten	1964	23 Aug 1965	15 June 1967
TRONDHEIM	F 302	Marinens Hovedverft, Horten	1963	4 Sep 1964	2 June 1966
STAVANGER	F 303	Marinens Hovedverft, Horten	1965	4 Feb 1966	1 Dec 1967
NARVIK	F 304	Marinens Hovedverft, Horten	1964	8 Jan 1965	30 Nov 1966

Displacement, tons: 1 450 standard; 1 745 full load
Dimensions, feet (metres): 317 × 36·7 × 17·4 (screws) *(96·6 × 11·2 × 5·3)*
Missiles: SSM: 6 Penguin;
SAM: Octuple Sea Sparrow
Guns: 4—3 in *(76 mm)* (2 twin mounts US Mk 33)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes;
Terne system with 6-barrelled rocket launcher
Main engines: 1 set De Laval Ljungstrom double reduction geared turbines; 1 shaft; 20 000 shp
Boilers: 2 Babcock & Wilcox
Speed, knots: 25
Complement: 151 (11 officers, 140 ratings)

Built under the five-year naval construction programme approved by the Norwegian Storting (Parliament) late in 1960. Although all the ships of this class were constructed in the Norwegian Naval Dockyard, half the cost was borne by Norway and the other half by the USA. The design of these ships is based on that of the "Dealey" class destroyer escorts of the US Navy, but considerably modified to suit Norwegian requirements.

Engineering: The main turbines and auxiliary machinery were all built by De Laval Ljungstrom, Sweden at the company's works in Stockholm-Nacka.

Radar: Search: DRBV 22.
Tactical and fire control: HSA M 22 system.
Navigation: Decca 1226.

Sonar: One Terne III Mk 3; one SQS 36.

NARVIK *7/1980, Michael D. J. Lennon*

CORVETTES

2 "SLEIPNER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SLEIPNER	F 310	Nylands Verksted Shipyard	1963	9 Nov 1963	29 Apr 1965
AEGER	F 311	Akers, Oslo	1964	24 Sep 1965	31 Mar 1967

Displacement, tons: 600 standard; 780 full load
Dimensions, feet (metres): 227·8 × 26·2 × 8·2 *(69 × 8 × 2·4)*
Guns: 1—3 in *(76 mm)* (US Mk 34 mount); 1—40 mm
A/S weapons: Terne ASW system;
6 (2 triple) Mk 32 A/S torpedo tubes
Main engines: 4 Maybach (MTU) diesels; 2 shafts;
9 000 bhp = over 20 knots
Complement: 62

Under the five-year programme only two instead of the originally planned five new corvettes were built.

Fire control: TVT-300 GFCS.

Radar: Decca 1229 and 202.

Sonar: One Terne III Mk 3; one SQS 36.

SLEIPNER *1979, Royal Norwegian Navy*

LIGHT FORCES

14 "HAUK" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders* (see notes)	*Commissioned*
HAUK	P 986	Bergens Mek. Verksteder	17 Aug 1977
ØRN	P 987	Bergens Mek. Verksteder	19 Jan 1979
TERNE	P 988	Bergens Mek. Verksteder	13 Mar 1979
TJELD	P 989	Bergens Mek. Verksteder	25 May 1979
SKARV	P 990	Bergens Mek. Verksteder	17 July 1979
TEIST	P 991	Bergens Mek. Verksteder	11 Sep 1979
JO	P 992	Bergens Mek. Verksteder	1 Nov 1979
LOM	P 993	Bergens Mek. Verksteder	15 Jan 1980
STEGG	P 994	Bergens Mek. Verksteder	18 Mar 1980
FALK	P 995	Bergens Mek. Verksteder	30 Apr 1980
RAVN	P 996	Westamarin A/S, Alta	20 May 1980
GRIBB	P 997	Westamarin A/S, Alta	10 July 1980
GEIR	P 998	Westamarin A/S, Alta	16 Sep 1980
ERLE	P 999	Westamarin A/S, Alta	10 Dec 1980

Displacement, tons: 120 standard; 150 full load
Dimensions, feet (metres): 119·7 × 20·3 × 5·5 *(36·5 × 6·2 × 1·6)*
Missiles: SSM; 6 Penguin Mk 2 (single launchers)
Guns: 1—40 mm; 1—20 mm
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 2 MTU diesels; 7 000 hp = 34 knots
Range, miles: 440 at 34 knots
Complement: 22

Ordered 12 June 1975—ten from Bergens Mek. Verksteder (Lakeseväg) (also building Swedish "Hugin" class) and four from Westamarin. Very similar to "Snogg" class with improved fire control. *Hauk* laid down May 1976 and launched 21 February 1977. *Ørn* laid down June 1977, *Terne* laid down October 1977.

Control system: Weapon control by MSI-80S developed by Kongsberg Våpenfabrikk.

Missiles: Of a longer range version developed in collaboration with the Royal Swedish Navy.

GRIBB *1980, Royal Norwegian Navy*

20 "STORM" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
STORM	P 960	Bergens MV	1968
BLINK	P 961	Bergens MV	18 Dec 1965
GLIMT	P 962	Bergens MV	1966
SKJOLD	P 963	Westermoen, Mandal	1966
TRYGG	P 964	Bergens MV	1966
KJEKK	P 965	Bergens MV	1966
DJERV	P 966	Westermoen, Mandal	1966
SKUDD	P 967	Bergens MV	1966
ARG	P 968	Bergens MV	1966
STEIL	P 969	Westermoen, Mandal	1967
BRANN	P 970	Bergens MV	1967
TROSS	P 971	Bergens MV	1967
HVASS	P 972	Westermoen, Mandal	1967
TRAUST	P 973	Bergens MV	1967
BROTT	P 974	Bergens MV	1967
ODD	P 975	Westermoen, Mandal	1967
PIL	P 976	Bergens MV	1967
BRASK	P 977	Bergens MV	1967
ROKK	P 978	Westermoen, Mandal	1968
GNIST	P 979	Bergens MV	1968

Displacement, tons: 100 standard; 125 full load
Dimensions, feet (metres): 120 × 20·5 × 5 *(36·5 × 6·2 × 1·5)*
Missiles: SSM; 6 Penguin (single launchers)
Guns: 1—3 in *(76 mm)*; 1—40 mm
Main engines: 2 Maybach (MTU) diesels; 2 shafts; 7 200 bhp = 32 knots

The first of 20 (instead of the 23 originally planned) gunboats of a new design built under the five-year programme was *Storm*, launched on 8 February 1963, and completed on 31 May 1963, but this prototype was eventually scrapped and replaced by a new series construction boat as the last of the class. The first of the production boats was *Blink*, launched on 28 June 1965 and completed on 18 December 1965. The introduction of Penguin surface-to-surface guided missile launchers started in 1970, in addition to originally designed armament although all boats do not carry full complement at all times.

ODD *1979, Royal Norwegian Navy*

6 "SNÖGG" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
SNÖGG (ex-*Lyr*)	P 980	Bätservice, Mandal	1970
RAPP	P 981	Bätservice, Mandal	1970
SNAR	P 982	Bätservice, Mandal	1970
RASK	P 983	Bätservice, Mandal	1971
KVIKK	P 984	Bätservice, Mandal	1971
KJAPP	P 985	Bätservice, Mandal	1971

Displacement, tons: 100 standard; 125 full load
Dimensions, feet (metres): 120 × 20·5 × 5 *(36·5 × 6·2 × 1·3)*
Missiles: SSM; 4 Penguin (single launchers)
Gun: 1—40 mm
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 2 Maybach (MTU) diesels; 2 shafts; 7 200 bhp = 32 knots
Complement: 18

Steel hulled fast attack craft, started coming into service in 1970. Hulls are similar to those of the "Storm" class gunboats. Do not carry full complement of Penguin missiles at all times.

RAPP *1979, Royal Norwegian Navy*

8 "TJELD" CLASS (FAST ATTACK CRAFT—TORPEDO)

No.	*Builders*	*Commissioned*
P 343	Bätservice, Mandal	June 1960
P 348	Bätservice, Mandal	June 1961
P 349	Bätservice, Mandal	June 1961
P 357	Bätservice, Mandal	Dec 1961
P 380	Bätservice, Mandal	Jan 1966
P 381	Bätservice, Mandal	July 1964
P 387	Bätservice, Mandal	Feb 1965
P 388	Bätservice, Mandal	Mar 1962

Displacement, tons: 70 standard; 82 full load
Dimensions, feet (metres): 80·3 × 24·5 × 6·8 *(24·5 × 7·5 × 2·1)*
Guns: 1—40 mm; 1—20 mm
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 2 Napier Deltic Turboblown diesels; 2 shafts; 6 200 bhp = 45 knots
Range, miles: 450 at 40 knots; 600 at 25 knots
Complement: 18

Built of mahogany to Bätservice design, known generally as "Nasty" class. All in reserve.

Transfers: Two to Turkey via West Germany, two to the USA and six to Greece.

P 348 *1979, Royal Norwegian Navy*

1 "VADSØ" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
VADSØ	P 340	A/S Stord Verft	1951

Displacement, tons: 631
Dimensions, feet (metres): 169·3 × 29·5 × 18 *(51 × 9 × 5·5)*
Gun: 1—40 mm
Main engine: 1 MAK 8M451 diesel
Complement: 20

Built as a whaler in 1951 and rebuilt in 1976. Used for coastal patrol.

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
TARVA	TSD 1	Fjellstrand Aluminium Yachts, Omastrand	1 Dec 1974
WELDING	ØSD 1	Fjellstrand Aluminium Yachts, Omastrand	1 Nov 1974

Displacement, tons: 27·5
Dimensions, feet (metres): 53·3 × 17·3 × 3·8 *(16·3 × 5·3 × 1·2)*
Gun: 1—12·7 mm Browning MG
Main engines: 2 General Motors diesels; 2 shafts = 15+ knots
Complement: 4

All welded aluminium hull.

WELDING *1979, Royal Norwegian Navy*

MINE WARFARE FORCES

2 COASTAL MINELAYERS

Name	*No.*	*Builders*	*Commissioned*
VIDAR	N 52	Mjellem and Karlsen, Bergen	21 Oct 1977
VALE	N 53	Mjellem and Karlsen, Bergen	10 Feb 1978

Displacement, tons: 1 500 standard; 1 673 full load
Dimensions, feet (metres): 212·6 × 39·4 × 13·1 *(64·8 × 12 × 4)*
Guns: 2—40 mm
Mines: See note
Main engines: 2 Wichmann 7AX diesels; 4 200 bhp; 2 shafts = 15 knots
Complement: 50

Ordered 11 June 1975. Laid down—*Vale* (by Skaaluren, Rosendal), 1 February 1976. *Vidar*, 1 March 1976. Launched—18 March 1977 and 5 August 1977 respectively. *Vale* towed to Bergen for completion.

Mines: Carry 300-400 (dependent on type) on three decks with an automatic lift between. Loaded through hatches forward and aft each served by two cranes.

VALE *1979, Royal Norwegian Navy*

1 CONTROLLED MINELAYER

Name	*No.*	*Builders*	*Commissioned*
BORGEN	N 51	Marinens Hovedverft, Horten	1961

Displacement, tons: 282 standard
Dimensions, feet (metres): 102·5 × 26·2 × 11 *(31·2 × 8 × 3·4)*
Gun: 1—20 mm
Main engines: 2 General Motors diesels; 2 Voith-Schneider propellers; 660 bhp = 9 knots

Launched 29 April 1960.

BORGEN *1977, Royal Norwegian Navy*

10 Ex-US "ADJUTANT"/"SAUDA" CLASS (MSC 60) (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
SAUDA (ex-USS *MSC 102*)	M 311	Hodgeson Bros, Gowdy & Stevens, Maine	25 Aug 1953
SIRA (ex-USS *MSC 132*)	M 312	Hodgeson Bros, Gowdy & Stevens, Maine	28 Nov 1955
TANA (ex-*Roeselaere*, M 914, ex-*MSC 103*)	M 313	Hodgeson Bros, Gowdy & Stevens, Maine	1954
ALTA (ex-*Arlon* M 915, ex-*MSC 104*)	M 314	Hodgeson Bros, Gowdy & Stevens, Maine	1954
OGNA	M 315	Båtservice, Mandal	5 Mar 1955
VOSSO	M 316	Skaaluren Skibsbyggeri, Rosendal	16 Mar 1955
GLOMMA (ex-*Bastogne*, M 916, ex-*MSC 151*)	M 317	Hodgeson Bros, Gowdy & Stevens, Maine	1954
TISTA	M 331	Forende Båtbyggeriex, Risör	27 Apr 1955
KVINA	M 332	Båtservice, Mandal	12 July 1955
UTLA	M 334	Båtservice, Mandal	15 Nov 1955

Displacement, tons: 333 standard; 384 full load
Dimensions, feet (metres): 144 × 28 × 8·5 *(44 × 8·5 × 2·6)*
Guns: 2—20 mm (except *Tana*)
Main engines: General Motors diesels; 880 bhp = 13·5 knots
Oil fuel, tons: 25
Complement: 38 (39 in *Tana*)

Hull of wooden construction. Five coastal minesweepers were built in Norway with US engines. *Alta, Glomma* and *Tana* were taken over from the Royal Belgian Navy in May, September and March 1966, respectively, having been exchanged for two Norwegian ocean minesweepers of the US MSO type, *Lagen* (ex-*MSO 498*) and *Nansen* (ex-*MSO 499*).

Gunnery: All sweepers now have two new design 20 mm guns.

Mine hunter: *Tana* converted as a mine hunter in 1977—recommissioned 1 September 1977. Fitted with Thomson-CSF Ibis III mine hunting system.

TISTA *7/1980, Michael D. J. Lennon*

TANA *1977, Royal Norwegian Navy*

AMPHIBIOUS FORCES

5 "REINØYSUND" CLASS (LCTs)

Name	*No.*	*Builders*	*Commissioned*
REINØYSUND	L 4502	Mjellem & Karlsen, Bergen	Jan 1972
SØRØYSUND	L 4503	Mjellem & Karlsen, Bergen	May 1972
MAURSUND	L 4504	Mjellem & Karlsen, Bergen	Sep 1972
ROTSUND	L 4505	Mjellem & Karlsen, Bergen	Nov 1972
BORGSUND	L 4506	Mjellem & Karlsen, Bergen	1973

Displacement, tons: 550
Dimensions, feet (metres): 167·3 × 39·4 × 5·9 *(51·4 × 10·3 × 1·8)*
Guns: 3—20 mm
Speed, knots: 11·7

Capable of carrying seven tanks.

SØRØYSUND *1979, Royal Norwegian Navy*

2 "KVALSUND" CLASS (LCTs)

Name	*No.*	*Builders*	*Commissioned*
KVALSUND	L 4500	P. Høivold, Kristiansand	June 1968
RAFTSUND	L 4501	P. Høivold, Kristiansand	Mar 1969

Displacement, tons: 569
Dimensions, feet (metres): 149·6 × 33·8 × 5·9 *(45·6 × 10·3 × 1·8)*
Guns: 2—20 mm
Speed, knots: 11·7

DEPOT SHIP

Name	*No.*	*Builders*	*Commissioned*
HORTEN	A 530	A/S Horten Verft	Apr 1978

Displacement, tons: 2 500
Dimensions, feet (metres): 285·5 × 42·6 × 23 *(87 × 13 × 7)*
Aircraft: 1 helicopter on deck
Guns: 2—40 mm
Main engines: 2 Wichmann diesels; 2 shafts = 16·5 knots
Complement: 85

Contract signed 30 March 1976. Laid down 28 January 1977; launched 12 August 1977. Cost approximately £8 million. To serve both submarines and fast attack craft. Quarters for 60 extra and can cater for 190 extra.

HORTEN *1978, Royal Norwegian Navy*

MISCELLANEOUS

2 DIVING TENDERS

Name	*No.*	*Builders*	*Commissioned*
DRAUG	ROS 21	Nielsen, Harstad	1972
SARPEN	VSD 11	Nielsen, Harstad	1972

Small depot ships of 250 tons for frogmen and divers.

SARPEN (old number) *1977, Royal Norwegian Navy*

7 "WISTING" CLASS (COASTAL TRANSPORTS)

Name	*No.*	*Builders*	*Commissioned*
TORPEN	VSD 4	Båtservice Verft, Mandal	15 Dec 1977
WISTING	ØSD 2	Voldnes Skipsverft, Fosnavåg	30 Jan 1978
TAUTRA	TSD 5	Båtservice Verft, Mandal	15 Feb 1978
ROTVAER	NSD 35	Båtservice Verft, Mandal	Mar 1978
FJØLØY	RSD 23	Voldnes Skipsverft, Fosnavåg	Apr 1978
KRØTTØY	HSD 15	Voldnes Skipsverft, Fosnavåg	June 1978
KARLSØY	TRSD 4	P Høivolds Mek. Verksted	July 1978

Displacement, tons: 300 full load
Dimensions, feet (metres): 95·1 × 21·6 × 10 *(29 × 6·7 × 3·2)*
Gun: 1 Browning 12·7 mm MG
Main engine: 1 MWM TBD 601-6K diesel; 530 hp = 11 knots
Complement: 6

Can transport 100 tons.

FJØLØY *1978, Royal Norwegian Navy*

1 TORPEDO RECOVERY VESSEL

Name	*No.*	*Builders*	*Commissioned*
VERNØY	VSD 1	Fjellstrand Aluminium Yachts, Omastrand	Oct 1978

Displacement, tons: 100
Dimensions, feet (metres): 102·9 × 22·5 × 6·5 *(31·3 × 6·8 × 2)*
Main engines: 2 MWM diesels; 2 Schottel rudder-propeller = over 10 knots
Complement: 5

The vessel is fitted with equipment for oil pollution operations and fire fighting. All-welded aluminium hull.

VERNØY *1978, Royal Norwegian Navy*

2 TRAINING VESSELS

Name	*No.*	*Builders*	*Commissioned*
MARSTEINEN	VSD 2	Fjellstrand Aluminium Yachts, Omastrand	Jan 1978
KVARVEN	VSD 6	Fjellstrand Aluminium Yachts, Omastrand	July 1978

Displacement, tons: 39
Dimensions, feet (metres): 77 × 16·4 × 3·5 *(23·5 × 5 × 1·1)*
Gun: 1 Browning 12·7 mm MG
Main engines: 2 General Motors diesels; 2 shafts = 20 knots
Complement: 5
Berths: 18

The vessels are designed for training students at the Royal Norwegian Naval Academy in navigation, manoeuvring and seamanship. All-welded aluminium hulls. Also equipped with an open bridge and a blind pilotage position below deck.

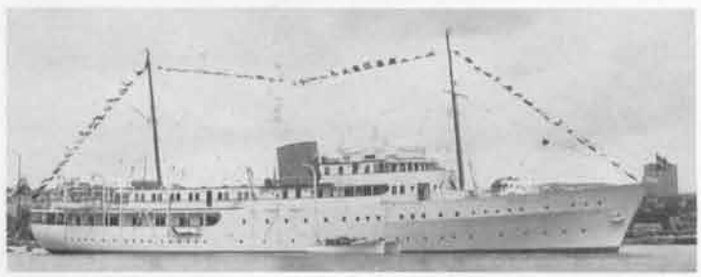
MARSTEINEN *1978, Royal Norwegian Navy*

ROYAL YACHT

Name	*No.*	*Builders*	*Commissioned*
NORGE (ex-*Philante*)	A 533	Camper & Nicholson's Ltd, Gosport, England	1937

Displacement, tons: 686
Dimensions, feet (metres): 263 × 38 × 15·2 *(80·2 × 11·6 × 4·6)*
Main engines: 8-cyl diesels; 2 shafts; 3 000 bhp = 17 knots

Built to the order of Mr. T. O. M. Sopwith as an escort and store vessel for the yachts *Endeavour I* and *Endeavour II*. Launched on 17 February 1937. Served in the Royal Navy as an anti-submarine escort during the Second World War, after which she was purchased by the Norwegian people for King Haakon at a cost of nearly £250 000 and reconditioned as a Royal Yacht at Southampton. Can accommodate about 50 people in addition to crew.



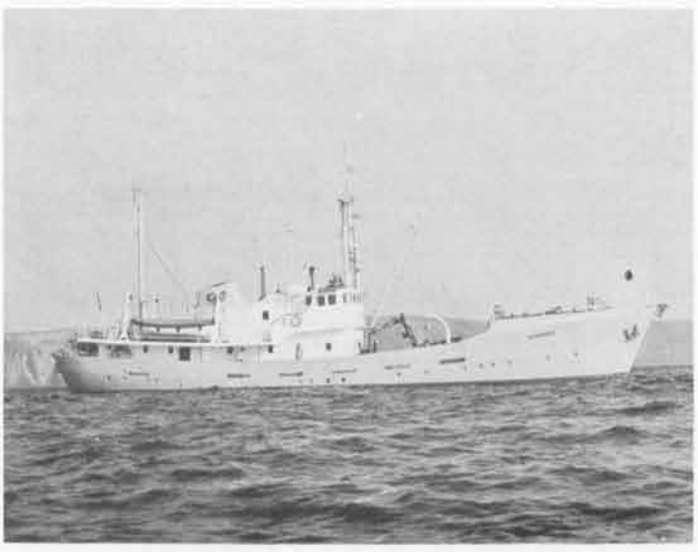
NORGE *1971, Royal Norwegian Navy*

RESEARCH SHIP

Name	*No.*	*Builders*	*Commissioned*
H. U. SVERDRUP	—	Orens Mekaniske Verkstad, Trondheim	1960

Displacement, tons: 400
Measurement, tons: 295 gross
Dimensions, feet (metres): 127·7 × 25 × 13 *(38·9 × 7·6 × 4)*
Main engines: Wichmann diesel; 600 bhp = 11·5 knots
Oil fuel, tons: 65
Range, miles: 5 000 at 10 knots cruising speed
Complement: 10 crew; 9 scientists

Operates for Norwegian Defence Research Establishment. Trawler hull.



H. U. SVERDRUP *1979, Royal Norwegian Navy*

2 TUGS

SAMSON VSD 7

Ex-West German of 300 tons built in 1938, 26·6 metres long, 1 diesel = 11 knots. Modified in 1978.

RAMNES VSD 13

Ex-West German *Robbe* of 101 tons built in 1938, 24 metres long, 1 diesel = 11 knots. Modified in 1979.

COAST GUARD

Set up in April 1977 for combined duties of Fishery Protection and Oil Rig Patrol. The base for this force is Sortland.

Name	*No.*	*Builders*	*Commissioned*
NORNEN	W 300	Mjellem & Karlsen, Bergen	1963

Measurement, tons: 1 030 gross
Dimensions, feet (metres): 201·8 × 32·8 × 15·8 *(61·5 × 10 × 4·8)*
Gun: 1—3 in *(76 mm)*
Main engines: 4 diesels; 3 500 bhp = 17 knots
Complement: 32

Launched 20 August 1962. Modernised in 1978 with increased tonnage.

NORNEN *1979, Royal Norwegian Navy*

3 "NORDKAPP" CLASS

Name	*No.*	*Builders*	*Commissioned*
NORDKAPP	W 320	Bergens Mek. Verksteder	12 Feb 1981
SENJA	W 321	Horten Verft	30 Jan 1981
ANDENES	W 322	Haugesund Mek. Verksted	20 Nov 1981

Displacement, tons: 3 000 approx full load
Dimensions, feet (metres): 346 × 47·9 × 15·1 *(105·5 × 14·6 × 4·6)*
Aircraft: 1 Lynx helicopter
Guns: 1—57 mm Bofors; 4—20 mm Rheinmetall
A/S weapons: 2 Mk 32 mountings; 6 DCs on stern rail
Main engines: 4 Wichmann diesels; 14 000 bhp = 23 knots
Complement: 42 peace; 76 war

Strengthened for ice. Fitted for fire fighting, anti-pollution work, all with two motor cutters and a Gemini-type dinghy. In November 1977 the Coast Guard Budget was cut from 2 000 to 1 400 million Kroner resulting in a reduction of the immediate building programme from seven to three ships.

Electronics: Navkis AIO system.

Radar: Search: One Plessey AWS 4.
Navigation: Two Decca 1226.

Sonar: Simrad SS 105.

SENJA *1980, Horten Verft*

Name	*No.*	*Builders*	*Commissioned*
FARM	W 301	Ankerlokken Verft	1962
HEIMDAL	W 302	Bolsones Verft, Molde	1962

Measurement, tons: 600 gross
Dimensions, feet (metres): 177 × 26·2 × 16·5 *(54·3 × 8·2 × 4·9)*
Gun: 1—3 in *(76 mm)*
Main engines: 2 diesels; 2 700 bhp = 16 knots
Complement: 29

Farm launched 22 February 1962 and *Heimdal* 7 March 1962. *Farm* modernised by Bergens Mekaniske Verksteder in 1979 and *Heimdal* by same firm in 1980.

HEIMDAL *1980, Royal Norwegian Navy*

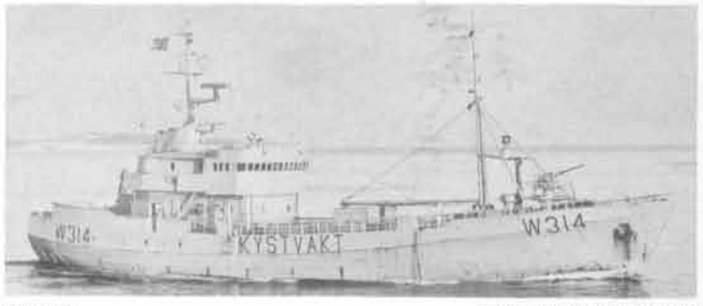
7 CHARTERED SHIPS

Name	*No.*	*Tonnage*	*Completion*
SØRFOLD	W 312	827	1951
MØGSTERFJORD	W 313	762	1975
STÅLBAS	W 314	498	1955
NORDSJØBAS	W 315	814	1978
VOLSTAD JR.	W 316	598	1950
LAFJORD	W 317	814	1978
GRIMSHOLM	W 319	1189	1978

W 312-4 and 316 chartered in 1977 to fill the gap until completion of new construction patrol vessels. All trawler type armed with one 40 mm gun. Remainder chartered 1980.

SØRFOLD *1978, Royal Norwegian Navy*

MØGSTERFJORD *1978, Royal Norwegian Navy*



STÅLBAS *1978, Royal Norwegian Navy*

NORDSJØBAS *1980, Royal Norwegian Navy*

VOLSTAD JR. *1977, Royal Norwegian Navy*

SURVEY VESSEL

Under control of Ministry of Environment although she carries the Kystvakt label.

Name	*Displacement*	*Launched*	*Officers*	*Crew*
HYDROGRAF	300	1967	3	15

HYDROGRAF *1979, Royal Norwegian Navy*

OMAN

Senior Officers

Commander Sultan of Oman's Navy:
Commodore J. P. Gunning, RN
Chief of Staff:
Captain K. Lee-White, CBE

Personnel

(a) 1981: 1 500 officers and men
(b) Voluntary service

Bases

Qa'Adat Sultan Bin Ahmed Al Bahryya, Muscat (main base dockyard and slipway)
Mina Raysut (advanced naval base)
Jazirat Ghanam (advanced naval base)

Prefix to Ships' Names

SNV (Sultanate Naval Vessel)

Mercantile Marine

12 vessels of 6 953 tons gross

DELETIONS

1978 *Al Bushra* (lost in Biscay storm 28 December)
1979 *Al Nasiri, Al Salihi* (Ex-MSCs)
1980 *Dhofar* (sunk as target in successful Exocet firings, 18 May)

ROYAL YACHT

Name	*No.*	*Builders*	*Commissioned*
AL SAID	—	Brooke Marine, Lowestoft	1971

Displacement, tons: 900
Dimensions, feet (metres): 203·4 × 35·1 × 9·8 *(62 × 10·7 × 3)*
Main engines: 2 Paxman Ventura 12-cyl diesels; 2 shafts; 2 470 bhp = 12 knots
Complement: 39 (7 officers, 32 ratings)

Built by Brooke Marine, Lowestoft. Launched 7 April 1970 as a yacht for the Sultan of Oman. Carried on board is one Fairey Marine "Spear" patrol craft. Helicopter deck added in last refit.

Radar: Decca 1226.

AL SAID *1971, Brooke Marine*

LIGHT FORCES

0 + 1 +2 VOSPER THORNYCROFT TYPE (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 420 full load (approx)
Dimensions, feet (metres): 183·7 × 24·5 × 8·2 *(56 × 7·5 × 2·5)*
Missiles: SSM; 6—Exocet MM 40 (triple launchers)
Guns: 1—76 mm OTO Melara Compact; 2—40 mm Breda L70 (twin)
Main engines: 4 Paxman 18-cyl diesels; 18 200 hp; 4 shafts = 40 knots
Complement: 59

First ordered in 1980 for delivery mid-1982, two more in January 1981. To be fitted with radar and optical fire control. Complement includes trainees.

56 Metre Fast Attack Craft *1980, Vosper Thornycroft*

2 BROOKE MARINE TYPE (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
AL MANSUR	B 2	Brooke Marine, Lowestoft	26 Mar 1973
AL NEJAH	B 3	Brooke Marine, Lowestoft	13 May 1973

Displacement, tons: 166 standard; 184 full load
Dimensions, feet (metres): 123 × 22·5 × 6 *(37·5 × 6·9 × 2·2)*
Missiles: SSM; 2 Exocet (single cells)
Guns: 2—40 mm/L70 Breda (twin)
Main engines: 2 Paxman Ventura 16RP200 diesels; 4 800 bhp = 25 knots
Range, miles: 3 300 at 15 knots
Complement: 28 (4 officers, 24 ratings)

Ordered 5 January 1971.

Gunnery: Laurence-Scott optical director and Sperry Sea Archer.

Loss: *Al Bushra* (B 1) lost overboard from transport in hurricane force winds in the Bay of Biscay December 1978 while being shipped home after refit.

Radar: Decca 1229.

Refits: Refitted November 1977-November 1978 by Brooke Marine with addition of two Exocet with Sea Archer fire control.

AL MANSUR *4/1978, Brooke Marine*

4 BROOKE MARINE TYPE (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
AL WAFI	B 4	Brooke Marine, Lowestoft	Mar 1977
AL FULK	B 5	Brooke Marine, Lowestoft	24 Mar 1977
AL MUJAHID	B 6	Brooke Marine, Lowestoft	20 July 1977
AL JABBAR	B 7	Brooke Marine, Lowestoft	6 Oct 1977

Displacement, tons: 135 standard, 153 full load
Guns: 1—76 mm OTO Melara Compact; 1—20 mm
Complement: 27 (3 officers, 24 ratings)

Dimensions, main engines and range as in B 2 and 3 above.

Ordered 26 April 1974.

Gunnery: Laurence Scott optical director and Sperry Sea Archer.

Radar: Decca 1226 and 1229.

AL FULK *1978, Sperry*

AMPHIBIOUS FORCES

1 LANDING SHIP—LOGISTIC

Name	*No.*	*Builders*	*Commissioned*
AL MUNASSIR	L 1	Brooke Marine, Lowestoft	31 Jan 1979

Displacement, tons: 2 000
Dimensions, feet (metres): 276 × 49 × 7·3 *(84·1 × 14·9 × 2·3)*
Guns: 1—76 mm; 2—20 mm
Main engines: 2 Mirrlees Blackstone ESL 8MGR diesels; 2 440 bhp = 12 knots
Complement: 47 plus 188 troops

Ordered 1 March 1977. Bow ramp. Full naval command facilities. Capable of carrying tanks, guns and troops. Carries two Rotork landing craft. Helicopter deck suitable for large aircraft. No hangar. Laid down 4 July 1977. Launched 25 May 1978.

Radar: Decca TM 1229.

AL MUNASSIR *1/1979, Michael D. J. Lennon*

1 LANDING CRAFT—UTILITY

Name	*No.*	*Builders*	*Commissioned*
AL NEEMRAN	C 7	Lewis Offshore, Stornoway	1979

Measurement, tons: 85 deadweight
Dimensions, feet (metres): 84 × 24 × 6 *(25·5 × 7·4 × 1·8)*
Main engines: Twin diesels = 8 knots

1 LANDING CRAFT—UTILITY

Name	*No.*	*Builders*	*Commissioned*
AL DHAIBAH	C 6	Impala Marine, Twickenham, UK	1975

Measurement, tons: 75 deadweight
Dimensions, feet (metres): 75 × 23 × 5 *(22·9 × 7 × 1·5)*
Main engines: 2 diesels; 2 shafts; 520 bhp = 9 knots

2 LANDING CRAFT—UTILITY

Name	*No.*	*Builders*	*Commissioned*
AL SANSOOR	C 4	Cheverton Ltd, Isle of Wight	Jan 1975
AL DOGHAS	C 5	Cheverton Ltd, Isle of Wight	Jan 1975

Measurement, tons: 45 deadweight
Dimensions, feet (metres): 60 × 20 × 3·5 *(18·3 × 6·1 × 1·1)*
Main engines: 2 diesels; 240 hp = 7 knots

AL SANSOOR *1975, Roger Smith*

1 LANDING CRAFT—UTILITY

Name	*No.*	*Builders*	*Commissioned*
SULHAFA AL BAHR	C 3	Cheverton Ltd, Isle of Wight	1975

Measurement, tons: 30 deadweight
Dimensions, feet (metres): 45 × 15 × 3 *(13·7 × 4·6 × 0·9)*
Main engines: Twin Perkins diesels = 6 knots

1 LANDING CRAFT—UTILITY

Of 100 ton deadweight. Ordered from Vosper, Singapore in 1980.

MISCELLANEOUS

1 COASTAL FREIGHTER

Name	*No.*	*Builders*	*Commissioned*
AL SULTANA	A 2	Conoship, Groningen	4 June 1975

Measurement, tons: 1 380 deadweight
Dimensions, feet (metres): 214·3 × 35 × 13·5 *(65·4 × 10·7 × 4·2)*
Main engine: Mirrlees Blackstone diesel; 1 150 bhp = 11 knots
Complement: 20

Launched 18 May 1975.

AL SULTANA *1975, Dick van der Heijde Jnr.*

1 SURVEY CRAFT

Displacement, tons: 23·6
Dimensions, feet (metres): 50·8 × 13·1 × 4·3 *(15·5 × 4 × 1·3)*
Main engines: 2 Volvo TMD 120A diesels; 520 hp; 2 shafts = 13·5 knots
Range, miles: 500

Built by Watercraft, Shoreham, England in 1980.

SHABAB OMAN (ex-*Captain Scott*)

Topsail schooner taken over from Dulverton Trust in 1978 used for sail training for the young people of Oman.

ROYAL OMAN POLICE

1 "CG 27" TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 50
Dimensions, feet (metres): 87·6 × 17·1 × 3·6 *(26·7 × 5·2 × 1·1)*
Speed, knots: 25

Built in 1979 by Karlskrona Varvet. GRP hull.

5 VOSPER THORNYCROFT 75 ft TYPE (COASTAL PATROL CRAFT)

HARAS 1-5

Displacement, tons: 45
Dimensions, feet (metres): 75 × 19·5 × 5 *(22·9 × 6 × 1·5)*
Guns: 2—20 mm
Main engines: 2 Caterpillar diesels; 1 840 hp = 24·5 knots
Range, miles: 600 at 20 knots; 1 000 at 11 knots
Complement: 11

Completed 22 December 1975 by Vosper Thornycroft. GRP hulls. *Haras 5* commissioned November 1978.

HARAS 5 *11/1978, Royal Oman Police*

1 COASTAL PATROL CRAFT

ZARA 17

Displacement, tons: 18
Dimensions, feet (metres): 45·6 × 14·1 × 3·6 *(13·9 × 4·3 × 1·1)*
Gun: 1 MG
Main engines: 2 Cummins VTA-903-M diesels; 710 shp = 22 knots
Range, miles: 510 at 22 knots

Built by Watercraft, Shoreham, England in 1980.

7 CHEVERTON TYPE

W 1 **W 2** **W 3** **W 4** **W 5** **W 6** **W 7**

Displacement, tons: 3·5
Dimensions, feet (metres): 27 × 9 × 2·8 *(8·2 × 2·7 × 0·8)*
Main engines: Twin diesels = 25 knots

Purchased April 1975.

PAKISTAN

Ministerial

Minister of Defence:
Mr. M. Talpur

Headquarters' Appointment

Chief of the Naval Staff:
Vice-Admiral K. R. Niazi HI(M), SJ

Command Appointment

Commander Pakistan Fleet:
Rear-Admiral I. F. Qadir TI(M)

Diplomatic Representation

Naval Attaché in London:
Commodore S. Akbar
Naval Attaché in Paris:
Captain A. Tasnim SJ*
Naval Attaché in Teheran:
Captain A. H. Khan
Naval Attaché in Washington:
Captain S. M. Khan

Personnel

(a) 1981: 11 000 (950 officers; 10 050 ratings)
(b) Voluntary service

Naval Base and Dockyard

Karachi

Naval Air Arm

3 Breguet Atlantic BR 1150
6 Sea King helicopters
4 Alouette III helicopters
2 Cessna

Prefix to Ships' Names

PNS

Strength of the Fleet

Type	*Active*	*Building*
Submarines—Patrol	6	—
Submarines—40 tons	6	—
Cruiser	1	—
Destroyers	8	—
Fast Attack Craft—Gun	12	—
Fast Attack Craft—Torpedo	4	—
Large Patrol Craft	5	—
Minesweepers—Coastal	6	—
Survey Ship	1	—
Tankers	2	—
Tug—Ocean	1	—
Tugs—Harbour	2	—
Water Barge	1	—
Floating Docks	2	—

Mercantile Marine

Lloyd's Register of Shipping:
84 vessels of 478 019 tons gross

DELETIONS

Frigates

1977 Tughril
1980 Tippu Sultan

Minesweeper

1979 Munsif

PENNANT LIST

Submarines

S 131	Hangor
S 132	Shushuk
S 133	Mangro
S 134	Ghazi
S 135	Hashmat
S 136	Hurmat

Cruiser

C 84	Babur

Destroyers

D 160	Alamgir
D 161	Badr
D 162	Jahangir
D 164	Shah Jahan
D 165	Tariq
D 166	Taimur
D 167	Tughril
D 168	Tippu Sultan

Minesweepers

M 160	Mahmood
M 161	Momin
M 162	Mubarak
M 164	Mujahid
M 165	Mukhtar
M 167	Moshal

Survey Ship

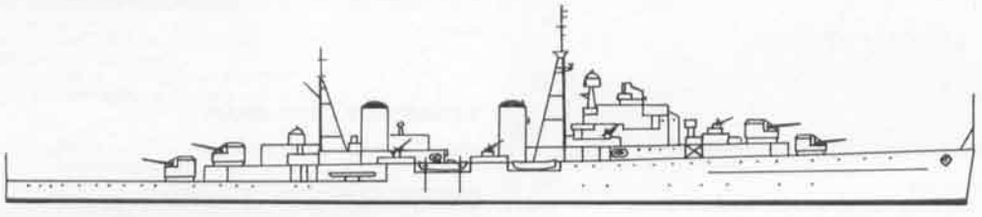
F 262	Zulfiquar

Light Forces

HDF 01-04	"Hu Chwan" class
P 140	Rajshahi
P 141	Quetta
P 142	Lahore
P 143	Mardan
P 144	Gilgit
P 145	Pishin
P 147	Sukkur
P 148	Sehwan
P 149	Bahawalpur
P 154	Bannu
P 155	Baluchistan
P 156	Kalat
P 157	Larkana
P 159	Sind
P 160	Sahiwal

Service Forces

A 40	Attock
A 41	Dacca
A 42	Madadgar
A 43	Rustom
A 44	Bholu
A 45	Gama
A 46	Zum Zum

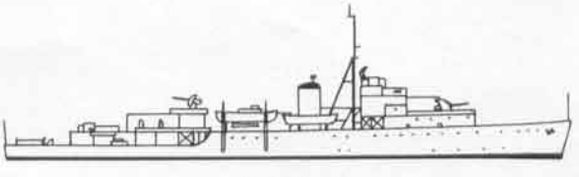


BABUR

BADR

SHAH JAHAN

ALAMGIR and JAHANGIR



ZULFIQUAR

SUBMARINES

2 FRENCH "AGOSTA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HASHMAT (ex-SAS *Astrant*)	S 135	Dubigeon—Normandie (Nantes)	15 Sep 1976	14 Dec 1977	17 Feb 1979
HURMAT (ex-SAS *Adventurous*)	S 136	Dubigeon—Normandie (Nantes)	—	—	17 Feb 1979

Displacement, tons: 1 200 standard; 1 450 surfaced; 1 725 dived
Dimensions, feet (metres): 221·7 × 22·3 × 17·7 *(67·6 × 6·8 × 5·4)*
Torpedo tubes: 4—21·7 in *(550 mm)* (20 reload torpedoes)
Main machinery: Diesel-electric; 2 SEMT-Pielstick 16 PA4 diesels 3 600 hp; 1 main motor (3 500 kW) 4 600 hp; 1 cruising motor (23 kW); 1 shaft
Speed, knots: 12 surfaced; 20 dived
Range, miles: 8 500 at 9 knots (snorting); 350 at 3·5 knots (dived)
Endurance: 45 days
Complement: 54 (7 officers, 47 men)

Purchased in mid-1978 after United Nations' ban on arms sales to South Africa.

HURMAT *4/1980, Marius Bar*

4 FRENCH "DAPHNE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HANGOR	S 131	Arsenal de Brest	1 Dec 1967	28 June 1969	12 Jan 1970
SHUSHUK	S 132	C. N. Ciotat (Le Trait)	1 Dec 1967	30 July 1969	12 Jan 1970
MANGRO	S 133	C. N. Ciotat (Le Trait)	8 July 1968	7 Feb 1970	8 Aug 1970
GHAZI (ex-*Cachalote*)	S 134	Dubigeon, Normandie	12 May 1967	23 Sep 1968	1 Oct 1969

Displacement, tons: 700 standard; 869 surfaced; 1 043 dived
Dimensions, feet (metres): 189·6 × 22·3 × 15·1 *(57·8 × 6·8 × 4·6)*
Torpedo tubes: 12—21·7 in *(550 mm)* 8 bow, 4 stern (external)
Main machinery: Diesel-electric; 1 300 bhp (surfaced); electric motors 1 600 hp (dived); 2 shafts
Speed, knots: 13 surfaced; 15·5 dived
Complement: 45

The first three are the first submarines built for the Pakistan Navy. They are basically of the French "Daphne" class design, but slightly modified internally to suit Pakistan requirements and naval conditions. They are broadly similar to the submarines built in France for Portugal and South Africa and the submarines constructed to the "Daphne" design in Spain.

Transfer: The Portuguese "Daphne" class *Cachalote* was bought by Pakistan in December 1975.

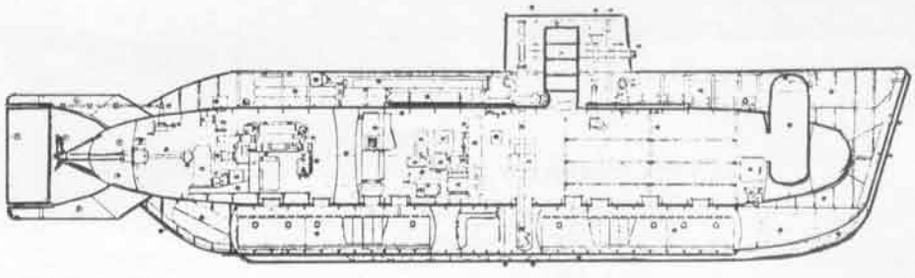
SHUSHUK *1972*

MANGRO *1971, Contre Amiral M. J. Adam*

6 "SX 404" CLASS

Displacement, tons: 40
Dimensions, feet (metres): 52·4 × 6·6 × — *(16 × 2 × —)*
Speed, knots: 11 surfaced; 6·5 dived
Range, miles: 1 200 surfaced; 60 dived
Complement: 4

Purchased 1972-73 from Cosmos, Leghorn. With a diving depth of 330 ft *(100 m)* and capable of carrying 12 passengers these submarines are valuable craft for clandestine raids, reconnaissance and a multitude of shallow-water tasks.



Drawing of "SX 404" Class *1973*

CRUISER

1 Ex-BRITISH "MODIFIED DIDO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BABUR (ex-HMS *Diadem*)	C 84	R. & W. Hawthorn Leslie & Co Ltd, Hebburn-on-Tyne	15 Nov 1939	26 Aug 1942	6 Jan 1944

Displacement, tons: 5 900 standard; 7 560 full load
Dimensions, feet (metres): 512 × 50·5 × 18·5 *(156·1 × 15·4 × 5·6)*
Guns: 8—5·25 in *(133 mm)* (4 twin); 14—40 mm (twins)
Torpedo tubes: 6—21 in *(533 mm)* (2 triple)
Armour: 3 in *(76 mm)* sides; 2 in *(51 mm)* decks and turrets
Main engines: Parsons sr geared turbines; 4 shafts; 62 000 shp
Boilers: 4 Admiralty 3-drum
Speed, knots: 30
Oil fuel, tons: 1 100
Range, miles: 4 000 at 18 knots
Complement: 588

Purchased on 29 February 1956. Refitted at HM Dockyard, Portsmouth and there transferred to Pakistan and renamed *Babur* on 5 July 1957.

Radar: Search: Type 960, Type 293.
Fire control: Type 284/285.

BABUR *1976, Pakistan Navy*

DESTROYERS

4 Ex-US "GEARING (FRAM 1)" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
TARIQ (ex-USS *Wiltsie*, DD 716)	D 165	Federal S.B. & D.D. Co	13 Mar 1945	31 Aug 1945	12 Jan 1946
TAIMUR (ex-USS *Epperson*, DD 719)	D 166	Todd Pacific Shipyards	20 June 1945	29 Dec 1945	19 Mar 1949
TUGHRIL (ex-USS *Henderson*, DD 785)	D 167	Todd Pacific Shipyards	27 Oct 1944	28 May 1945	4 Aug 1945
TIPPU SULTAN (ex-USS *Damato*, DD 871)	D 168	Bethlehem, Staten Island	10 May 1945	21 Nov 1945	27 Apr 1946

Displacement, tons: 2 425 standard; 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Guns: 4—5 in *(127 mm)*/38 (twins)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes; facilities for small helicopter; ASROC
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 32
Range, miles: 4 500 at 16 knots
Complement: 274

First pair transferred by purchase 29 April 1977. Reactivated and overhauled in USA during 1977-78 by Campbell Industries, San Diego at cost of $7·43 million. Second pair transferred by purchase 30 September 1980.

Radar: SPS 10 and 40.

Sonar: SQS 23.

US "GEARING (FRAM I)" Class

1 Ex-BRITISH "BATTLE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BADR (ex-HMS *Gabbard*, D 47)	D 161	Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	2 Feb 1944	16 Mar 1945	10 Dec 1946

Displacement, tons: 2 325 standard; 3 361 full load
Dimensions, feet (metres): 379 × 40·2 × 17 (screws) *(115·5 × 12·3 × 5·2)*
Guns: 4—4·5 in *(115 mm)*; 7—40 mm (2 twin; 3 single)
A/S weapon: Squid triple DC mortar
Torpedo tubes: 4—21 in *(533 mm)* (quad)
Main engines: Parsons geared turbines; 2 shafts; 50 000 shp
Boilers: 2 Admiralty 3-drum type
Speed, knots: 30
Oil fuel, tons: 680
Range, miles: 6 000 at 20 knots
Complement: 270

Purchased from Britain on 29 February 1956. Modernised with US funds under MDAP. Refitted at Palmers Hebburn, Yarrow, transferred to Pakistan on 24 Danuary 1957 and sailed from Portsmouth for Karachi on 17 February 1957.

Radar: Search: Type 293. One Marconi set.
Fire control: Type 275.

BADR *1977, Pakistan Navy*

3 Ex-BRITISH "CH" and "CR" CLASSES

Name	No.	Builders	Laid down	Launched	Commissioned
ALAMGIR (ex-HMS *Creole*, D 82)	D 160	J. Samuel White & Co Ltd, Cowes	3 Aug 1944	22 Nov 1945	14 Oct 1946
JAHANGIR (ex-HMS *Crispin*, ex-*Craccher*, D 168)	D 162	J. Samuel White & Co Ltd, Cowes	1 Feb 1944	23 June 1945	10 July 1946
SHAH JAHAN (ex-HMS *Charity*, D 29)	D 164	John I. Thornycroft Co Ltd, Woolston	9 July 1943	30 Nov 1944	19 Nov 1945

Displacement, tons: 1 710 standard; 2 545 full load
Dimensions, feet (metres): 362·7 × 35·7 × 17 *(110·5 × 10·9 × 5·2)*
Guns: 3—4·5 in *(115 mm)*; 6—40 mm
A/S weapons: 2 Squid triple DC mortars
Torpedo tubes: 4—21 in *(533 mm)* (quad)
Main engines: Parsons geared turbines; 2 shafts; 40 000 shp
Boilers: 2 Admiralty 3-drum type
Speed, knots: 36·75
Range, miles: 5 600 at 20 knots
Complement: 200

Shah Jahan purchased by USA and handed over to Pakistan on 16 December 1958, under MDAP, at yard of J. Samuel White & Co Ltd, Cowes, who refitted her. Sister ship *Taimur* (ex-HMS *Chivalrous*) was returned to the Royal Navy and scrapped in 1960-61.
Alamgir and *Jahangir* purchased by Pakistan in February 1956. Refitted and modernised in the UK by John I. Thornycroft & Co Ltd, Woolston, Southampton, in 1957-58 with US funds under MDAP. Turned over to the Pakistan Navy at Southampton in 1958 (*Crispin* on 18 March and *Creole* 20 June) and renamed.

Radar: Search: Type 293.
Fire control: Type 275 (Mk 6 director).
Navigation: Decca.

Sonar: Types 170 and 174.

JAHANGIR *1977, Pakistan Navy*

LIGHT FORCES

4 Ex-CHINESE "HAINAN" CLASS (LARGE PATROL CRAFT)

BALUCHISTAN P 155 **SIND** P 159 **PUNJAB** **SAHAD**

Displacement, tons: 360 standard; 400 full load
Dimensions, feet (metres): 197 × 24 × 6·1 *(60 × 7·4 × 2·1)*
Guns: 4—57 mm (twins); 4—25 mm (twins)
A/S weapons: 4—MBU 1 800; 2 DCTs; 2 DC racks
Mines: Rails fitted
Main engines: 4 diesels; 8 000 shp; 4 shafts
Speed, knots: 30
Range, miles: 1 300 at 15 knots
Complement: 70

First pair transferred mid-1976, second pair in April 1980.

Radar: Pot Head.

BALUCHISTAN (old number) *1976*

12 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

QUETTA P 141
LAHORE P 142
MARDAN P 143
GILGIT P 144
PISHIN P 145
SUKKUR P 147
SEHWAN P 148
BAHAWALPUR P 149
BANNU P 154
KALAT P 156
LARKANA P 157
SAHIWAL P 160

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin); 4—25 mm (twin)
A/S weapons: 8 DCs
Mines: Fitted with minerails for approx 10 mines
Main engines: 4 diesels; 4 800 bhp = 30 knots
Complement: 25

Transferred between 1972 and 1976.

Radar: Skin Head.

"SHANGHAI II" Class *1977, Pakistan Navy*

4 Ex-CHINESE "HUCHUAN" CLASS (FAST ATTACK HYDROFOIL—TORPEDO)

HDF 01, 02, 03, 04

Displacement, tons: 39 full load
Dimensions, feet (metres): 71·5 × 16·6 × 3·3 *(21·8 × 5 × 1)*
Guns: 4—14·5 mm (twins)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3—12-cyl M50 diesels; 3 shafts; 3 300 hp = 50+ knots (calm)
Range, miles: 500 cruising

Hydrofoil craft transferred by China in 1973.

"HUCHUAN" Class *1973, Pakistan Navy*

1 "TOWN" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
RAJSHAHI	P 140	Brooke Marine	1965

Displacement, tons: 115 standard; 143 full load
Dimensions, feet (metres): 107 × 20 × 11 *(32·6 × 6·1 × 3·4)*
Guns: 2—40 mm/70 Bofors
Main engines: 2 MTU 12V 538 diesels; 3 400 bhp = 24 knots
Complement: 19

The last survivor of a class of four built by Brooke Marine in 1965. Steel hull and aluminium superstructure.

RAJSHAHI *1973, Pakistan Navy*

1 FAIREY MARINE "SPEAR" CLASS (COASTAL PATROL CRAFT)

Of 4·3 tons, 29·8 ft long *(9·1 m)*, 26 knots with three machine guns.

2 M 55 TYPE (COASTAL PATROL CRAFT)

Length, feet (metres): 54·1 *(16·5)*
Gun: 1—14·5 mm MG

Built by Crestitalia-Ameglia, Italy in 1979.

M 55 Type *1979, EPIN*

MINE WARFARE FORCES

6 "ADJUTANT" and "MSC 268" CLASSES (MINESWEEPERS—COASTAL)

MAHMOOD (ex-*MSC 267*) M 160
MOMIN (ex-*MSC 293*) M 161
MUBARAK (ex-*MSC 262*) M 162
MUJAHID (ex-*MSC 261*) M 164
MUKHTAR (ex-*MSC 274*) M 165
MOSHAL (ex-*MSC 294*) M 167

Displacement, tons: 330 light; 390 full load
Dimensions, feet (metres): 144 × 27·9 × 8·5 *(43·9 × 8·5 × 2·6)*
Guns: 2—20 mm
Main engines: General Motors diesels; 2 shafts; 880 bhp = 13·5 knots
Range, miles: 3 000 at 10·5 knots
Complement: 39

Transferred to Pakistan by the USA under MAP. *Mukhtar* on 25 June 1959, *Mujahid* in November 1956, *Mahmood* in May 1957, *Mubarak* in 1957, *Momin* in August 1962 and *Moshal* on 13 July 1963.

"MSC 268" Class *1972, Pakistan Navy*

SURVEY SHIP

Name	No.	Builders	Commissioned
ZULFIQUAR (ex-*Dhanush*, ex-*Deveron F 265*)	F 262	Smith's Dock Co Ltd, South Bank-on-Tees	2 Mar 1943

Displacement, tons: 1 370 standard; 2 100 full load
Dimensions, feet (metres): 301·5 × 36·7 × 12·5 *(91·9 × 11·2 × 3·8)*
Guns: 1—4 in *(102 mm)*; 2—40 mm
Main engines: Triple expansion; 5 500 ihp
Boilers: 2 Admiralty 3-drum type
Speed, knots: 20
Range, miles: 6 000 at 12 knots
Complement: 150

Former British frigate of the "River" class converted into a survey ship, additional charthouse aft. She has strengthened davits and carries survey motor boats. The after 4-in gun was removed.

ZULFIQUAR *1972, Pakistan Navy*

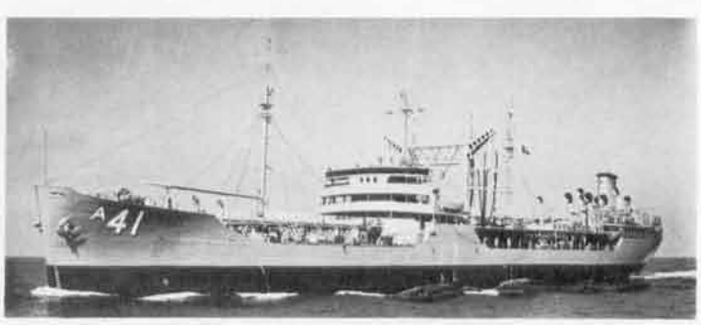
TANKERS

1 Ex-US "MISSION" CLASS
(UNDERWAY REPLENISHMENT TANKER)

DACCA (ex-USNS *Mission Santa Cruz*, AO 132) A 41

Displacement, tons: 5 730 light; 22 380 full load
Dimensions, feet (metres): 523·4 × 68 × 31 *(159·7 × 20·7 × 9·5)*
Guns: 3—40 mm
Main engines: Turbo-electric; 10 000 shp; 1 shaft = 16 knots
Boilers: 2 Babcock & Wilcox
Oil capacity: 20 000 tons
Complement: 160 (15 officers and 145 men)

Transferred on loan to Pakistan under MDAP. Handed over from the USA on 17 January 1963 after being refitted for under-way replenishment.
Purchased 31 May 1974.



DACCA

1 Ex-US YO TYPE

Name	No.	Builders	Commissioned
ATTOCK (ex-USS *YO 249*)	A 40	Trieste	1960

Displacement, tons: 600 standard; 1 255 full load
Dimensions, feet (metres): 177·2 × 32 × 15 *(54 × 9·8 × 4·6)*
Main engines: Direct coupled diesel; speed 8·5 knots
Complement: 26

A harbour oiler of 6 500 barrels capacity built for the Pakistan Navy. Transferred under the USA's MDAP.

RESCUE SHIP

1 Ex-US "CHEROKEE" CLASS

Name	No.	Builders	Commissioned
MADADGAR (ex-USS *Yuma*, ATF 94)	A 42	Commercial Iron Works, Portland, Oregon	31 Aug 1943

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Guns: 1—3 in *(76 mm)*; 2—40 mm
Main engines: 4 General Motors diesels; electric drive; 1 shaft; 3 000 bhp = 15 knots
Complement: 85

Ocean-going salvage tug. Laid down on 13 February 1943. Launched on 17 July 1943. Transferred from the US Navy to the Pakistan Navy on 25 March 1959 under MDAP. Fitted with powerful pumps and other salvage equipment.

MADADGAR *1976*

TUGS

RUSTOM A 43

Dimensions, feet (metres): 105 × 30 × 11 *(32 × 9·1 × 3·3)*
Main engines: Crossley diesel; 1 000 bhp = 9·5 knots
Range, miles: 3 000 at economic speed
Complement: 21

General purpose tug for the Pakistan Navy originally ordered from Werf-Zeeland at Hansweert, Netherlands, in August 1952, but after the liquidation of this yard the order was transferred to Worst & Dutmer at Meppel. Launched on 29 November 1955.

Name	No.	Builders	Commissioned
BHOLU (ex-US *YTL 755*)	A 44	Costaguta-Voltz	Sep 1958
GAMA (ex-US *YTL 754*)	A 45	Costaguta-Voltz	Sep 1958

Small harbour tugs built under an "off-shore" order.

AUXILIARIES

1 WATER BARGE

ZUM ZUM A 46

Built in Italy under MDAP.

2 FLOATING DOCKS

PESHAWAR (ex-US *ARD 6*)

Transferred June 1961. Of 3 000 tons lift.

FD II

Built 1974. Of 1 200 tons lift.

PANAMA

Personnel

A Coast Guard service split between both coasts.

(a) 1981: approx 300
(b) Voluntary service

Mercantile Marine

Lloyd's Register of Shipping:
4 090 ships of 24 190 680 tons gross

LIGHT FORCES

2 VOSPER TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PANQUIACO	GC 10	Vospers, Porchester, Portsmouth	Mar 1971
LIGIA ELENA	GC 11	Vospers, Porchester, Portsmouth	Mar 1971

Displacement, tons: 96 standard; 123 full load
Dimensions, feet (metres): 103 × 18·9 × 5·8 *(31·4 × 5·8 × 1·8)*
Guns: 2—20 mm
Main engines: 2 Paxman Ventura 12-cyl diesels; 2 800 bhp = 24 knots
Complement: 23

Hull of welded mild steel and upperworks of welded or buck-bolted aluminium alloy. Vosper fin stabiliser equipment. *Panquiaco* was launched on 22 July 1970 and *Ligia Elena* on 25 August 1970.

LIGIA ELENA *1972, C. and S. Taylor*

2 Ex-US "AVR" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
AYANASI	GC 12	USA	1943
ZARTI	GC 13	USA	1943

Displacement, tons: 35
Dimensions, feet (metres): 63·3 × 15·3 × 3·3 *(19·3 × 4·7 × 1)*
Guns: 2—12·7 mm MGs
Main engines: 2 General Motors 8V-71 diesels; 2 shafts = 22·5 knots
Complement: 8

Transferred to Panama 1965 *(Ayanasi)* and 1966. Wooden hulls with glass fibre sheathing.

Radar: Raytheon 1500B.

2 Ex-USCG UTILITY TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
MARTI	GC 14	USA	1950
JUPITER	GC 15	USA	1950

Displacement, tons: 13
Dimensions, feet (metres): 40·3 × 11·2 × 3·3 *(12·3 × 3·4 × 1)*
Gun: 1—12·7 mm MG
Main engines: 2 General Motors 6-71 diesels = 18 knots
Range, miles: 160 at 18 knots
Complement: 4

Transferred under MAP in 1962. Steel hulled Mk 1 Type. No radar—magnetic compass only.

AMPHIBIOUS FORCES

2 FRENCH "BATRAL" CLASS

Displacement, tons: 750 standard; 1 409 full load
Dimensions, feet (metres): 262·4 × 42·6 × 7·9 *(80 × 13 × 2·4)*
Guns: 2—40 mm; 1—81 mm mortar
Main engines: 2 diesels; 2 shafts; cp propellers; 3 600 hp = 16 knots
Range, miles: 4 500 at 13 knots
Complement: 47

Ordered from C. de la Manche, France in 1978. For further details see French section.

1 Ex-US "MODIFIED ELK RIVER" CLASS

TIBURON (ex-USS *Smokey Hill River*, LSMR 536) GNT 9

Displacement, tons: 944 standard; 1 084 full load
Dimensions, feet (metres): 206·2 × 34·5 × 10 *(67·6 × 11·3 × 3·3)*
Main engines: 2 General Motors diesels; 2 800 bhp = 12 knots
Complement: 140

Purchased 14 March 1975 from commercial sources. Armament removed. With a door cut in the bow she is used for logistic support. Originally a US Navy LSM Type completed as a rocket support ship with no bow doors in 1945.

3 Ex-US "LCM 8" CLASS

GNT 1, 2 and 3

Displacement, tons: 118 full load
Dimensions, feet (metres): 73·5 × 21 × 5·2 *(22·4 × 6·4 × 1·6)*
Main engines: 4 General Motors 6-71 diesels; 2 shafts = 10 knots
Complement: 6

Used for patrol and logistic duties with wheelhouse replaced by two deckhouses giving increased berthing, thereby extending endurance. Unarmed. Transferred 1972.

MISCELLANEOUS

1 Ex-US "YF 852" CLASS

— (ex-*YF 886*)

Displacement, tons: 590 full load
Dimensions, feet (metres): 132·9 × 29·9 × 8·9 *(40·5 × 9·1 × 2·7)*
Main engines: 2 General Motors diesels = 11 knots
Complement: 11

Built by Defoe S.B. Co in 1945. Acquired May 1975. Logistic support ship.

1 PATROL CRAFT

GNT 8

Displacement, tons: 60 full load
Dimensions, feet (metres): 65 × 12 × 5 *(19·9 × 3·7 × 1·5)*
Main engine: 1 General Motors 6-71 diesel, 1 shaft = 8 knots
Complement: 6

Built by Coast Guard. Used for logistic and patrol duties.

1 "65 ft" SHRIMP BOAT

Bought in 1976. Steel hulled. Single diesel = 11 knots. Can carry 150 troops on short hauls.

PAPUA NEW GUINEA

The Australian base at Manus in the Admiralty Islands, HMAS *Tarangau*, was de-commissioned on 14 November 1974 and handed over to the PNG Defence Force. It is now the PNGDF Patrol Boat Base Lombrun. The following ships were handed over to the PNGDF by the RAN. They work in collaboration with three Nomad and a DC3 aircraft.

Senior Officer
Brigadier E. R. Diro OBE (Commander PNGDF)

Bases

Port Moresby (HQ PNGDF); Lombrun

Mercantile Marine

Lloyd's Register of Shipping:
76 vessels of 24 904 tons gross

LIGHT FORCES

5 "ATTACK" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
AITAPE	84	Walkers Ltd, Maryborough	13 Nov 1967
SAMARAI	85	Evans Deakin & Co, Queensland	1 Mar 1968
LADAVA	92	Walkers Ltd, Maryborough	21 Oct 1968
LAE	93	Evans Deakin & Co, Queensland	3 Apr 1968
MADANG	94	Evans Deakin & Co, Queensland	28 Nov 1968

Displacement, tons: 146 full load
Dimensions, feet (metres): 107·5 × 20 × 7·3 *(32·8 × 6·1 × 2·2)*
Guns: 1—40 mm; 2 MGs
Main engines: 2 Paxman 16 YJCM diesels; 2 shafts; 3 500 bhp = 24 knots
Complement: 18

Steel hulls with aluminium superstructure. Can lay mines.

LAE *1975, PNGDF*

2 LANDING CRAFT (LCHs)

Name	*No.*	*Builders*	*Commissioned*
SALAMAUA	131	Walkers Ltd, Maryborough	1973
BUNA	132	Walkers Ltd, Maryborough	1973

Displacement, tons: 310 light; 503 full load
Dimensions, feet (metres): 146 × 33 × 6·5 *(44·5 × 10·1 × 1·9)*
Guns: 2—5 in MGs
Main engines: 2 V12 General Motors diesels; 2 shafts = 10 knots
Range, miles: 3 000 at 10 knots
Complement: 13

BUNA *1974, John Mortimer*

1 TUG

SHT 503 (ex-RAN *503*)

Displacement, tons: 47·5
Dimensions, feet (metres): 50 × 15 × — *(15·2 × 4·6 × —)*
Main engines: 2 General Motors diesels; 340 bhp = 8·9 knots
Complement: 3

Built by Perrin Engineering, Brisbane 1972.
Transferred 1974.

1 WATER LIGHTER

MVL 256 (ex-RAN *256*)

Transferred 1974.

PARAGUAY

Ministerial

Minister of National Defence:
Major General Marcial Samaniego

Personnel

(a) 1981: 2 000 officers and men including Coast Guard and 500 marines (25 per cent conscripts)
(b) 2 years' national service

Bases

Puerto Sajonia (Asunción) (main base, dockyard with one dry dock, one floating dock and one slipway, arsenal, marine barracks and helicopter station)
Chaco I (opposite Asunción) (naval air base and minor craft base)
Bahia Negra (on upper Paraguay River—secondary base)

Naval Air Arm

4 H-13 Sioux helicopters
2 North American AT-6 (Trainers)
3 Cessna U-206
1 Cessna 150M
1 Douglas C-47

General

Accepting the fact that river water keeps circulating systems cleaner than does sea-water, thus extending machinery life, the age of some of these ships must be causing concern. On the whole their hulls have not had the wearing effect of wave-action but 80 years is a long time for any ship to be running. A replacement programme must be fairly close ahead.

Training

(a) Officers—Basic training at National Military College, Asunción. Specialist and sea training in Argentina.
(b) Technical Ratings—at Naval School, Puerto Sajonia.

Coast Guard

Two distinct groups under naval control:
(a) Prefectura de Puertos (Harbour Guard)
(b) Cuerpo de Defensa Fluvial (River Guard)

Prefix to Ships' Names

Type designators only used

Strength of the Fleet

Type	*Active*
River Defence Vessels	2
Corvettes	3
Large Patrol Craft	1
Coastal Patrol Craft	8
Tugs	2
Tender	1
LCUs	2
Floating Dock	1
Service Craft	6
Survey Craft	1
Transport/Training Vessel	1
Buoy Tender	1
Dredgers	3
Floating Crane	1

Mercantile Marine

Lloyd's Register of Shipping:
27 vessels of 23 019 tons gross

RIVER DEFENCE VESSELS

2 "HUMAITA" CLASS

Name	*No.*	*Builders*	*Commissioned*
PARAGUAY (ex-*Commodor Meza*)	C 1	Odero, Genoa	May 1931
HUMAITA (ex-*Capitan Cabral*)	C 2	Odero, Genoa	May 1931

Displacement, tons: 636 standard; 865 full load
Dimensions, feet (metres): 231 × 35 × 5·3 *(70 × 10·7 × 1·7)*
Guns: 4—4·7 in; 3—3 in; 2—40 mm; 2—20 mm *(Paraguay only)*
Mines: 6
Armour: ·5 in side amidships; ·3 in deck; ·8 in CT
Main engines: Parsons geared turbines; 2 shafts; 3 800 shp = 17 knots
Boilers: 2
Oil fuel, tons: 150
Range, miles: 1 700 at 16 knots
Complement: 86

Both refitted in 1975.

Radar: One navigation set *(Paraguay)*.

PARAGUAY *1974, A. J. English*

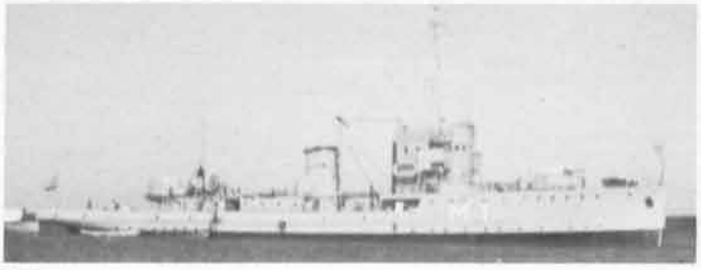
CORVETTES

3 "BOUCHARD" CLASS

Name	No.	Builders	Commissioned
NANAWA (ex-*Seaver* M 12)	M 1	Hansen and Puccini, San Fernando	20 May 1939
CAPITAN MEZA (ex-*Bouchard* M 7)	M 2	Rio Santiago Naval Yard	16 May 1937
TENIENTE FARINA (ex-*Py* M 10)	M 3	Rio Santiago Naval Yard	1 July 1939

Displacement, tons: 450 standard; 620 normal; 650 full load
Dimensions, feet (metres): 197 × 24 × 8·5 *(60 × 7·3 × 2·6)*
Guns: 4—40 mm Bofors; 2 MGs
Main engines: 2 sets MAN 2-cycle diesels; 2 000 bhp = 16 knots
Oil fuel, tons: 50
Range, miles: 6 000 at 12 knots
Complement: 70

Former Argentinian minesweepers of the "Bouchard" class.
Launched on 24 August 1938, 20 March 1936, 31 March 1938 respectively. Can carry mines.
Transferred from the Argentinian Navy to the Paraguayan Navy: *Capitan Meza*, February 1964; *Teniente Farina*, and *Nanawa*, 5 March 1968.



NANAWA *11/1975, A. J. English*

LIGHT FORCES

1 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
CAPITAN CABRAL (ex-*Triunfo*)	A 1	Werf-Conrad, Haarlem	1908

Displacement, tons: 180 standard; 206 full load
Dimensions, feet (metres): 107·2 × 23·5 × 9·8 *(32·7 × 7·2 × 3)*
Guns: 1—3 in Vickers; 2—37 mm Vickers; 4 MGs
Main engines: Triple expansion; 1 shaft; 300 ihp = 9 knots
Complement: 47

Former tug. Launched in 1907. Of wooden construction. Stationed on Upper Paraña River.

2 CG TYPE (COASTAL PATROL CRAFT)

P1 (ex-USCGC 20417) **P2** (ex-USCGC 20418)

Displacement, tons: 16
Dimensions, feet (metres): 45·5 × 13·5 × 3·5 *(13·9 × 4·1 × 1·1)*
Guns: 2—20 mm
Main engines: 2 petrol motors; 2 shafts; 190 hp = 20 knots
Complement: 10

Of wooden construction. Built in the USA in 1944. Acquired from the United States Coast Guard in 1944. Existence now doubtful.

6 "701" CLASS (COASTAL PATROL CRAFT)

P 101 **102** **103** **104** **105** **106**

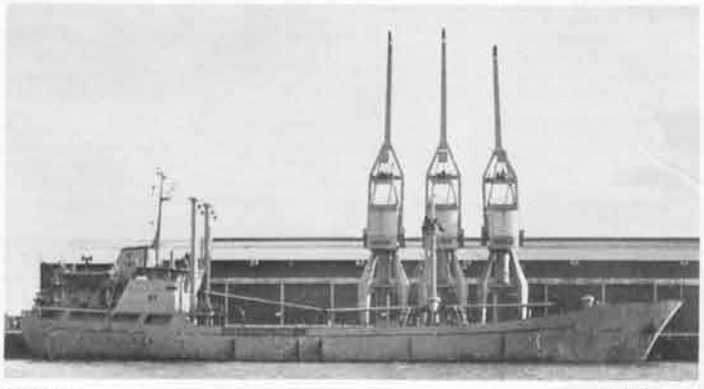
Patrol craft of 40 ft and 10 tons with two 20 mm guns or two ·5 calibre machine guns. Transferred by USA, two in December 1967, three in September 1970 and one in March 1971.

TRAINING SHIP/TRANSPORT

Name	No.	Builders	Commissioned
GUARANI	—	Tomas Ruiz de Velasco, Bilbao	Feb 1968

Measurement, tons: 714 gross; 1 047 deadweight
Dimensions, feet (metres): 240·3 × 36·3 × 11·9 *(73·6 × 11·1 × 3·7)*
Main engine: 1 diesel; 1 300 hp = 13 knots

Refitted in 1975 after a serious fire in the previous year off the coast of France. Spends most of her time acting as a freighter on the Asunción-Europe run, commercially operated for the Paraguayan Navy.



GUARANI *1978, N. Ling*

TENDER

Ex-US "LSM 1" CLASS (CONVERTED)

Name	No.	Builders	Commissioned
BOQUERON (ex-Argentine *Corrientes*, ex-US *LSM 86*, ex-*Teniente Pratts Gil*)	PH 1	Brown S.B. Co, Houston	13 Oct 1944

Displacement, tons: 1 095 full load
Dimensions, feet (metres): 203·5 × 33·8 × 8 *(62 × 10·3 × 2·4)*
Guns: 4—40 mm
Main engines: 2 diesels; 2 shafts; 2 800 hp = 13 knots
Range, miles: 4 100 at 12 knots
Complement: 66

Transferred as a gift from Argentina 13 January 1972. Light Forces Tender with helicopter deck added aft. Officially classified as "helicopter-carrier" but whether she can carry one or two helicopters is not known—two might be a crowd. Converted at Navyard, Buenos Aires during 1968.

BOQUERON *11/1975, A. J. English*

TUGS

2 Ex-US YTL TYPE

Name	No.	Builders	Commissioned
— (ex-US *YTL 211*)	R 5	Everett Pacific S.B. & D.D. Co, Wash	1945
— (ex-US *YTL 567*)	R 11	Everett Pacific S.B. & D.D. Co, Wash	1945

Displacement, tons: 82 full load
Dimensions, feet (metres): 66·2 × 17 × 8·5 *(20·2 × 5·2 × 2·6)*
Main engine: 1 diesel; 300 bhp
Complement: 5

Small harbour tugs transferred to Paraguay by the USA under the Military Aid Programme in March 1967 (YTL 211) and April 1974 (YTL 567). By sale both on 11 February 1977.

1 FLOATING DOCK

DF 1 (Ex-US *AFDL 26*)

Built 1944, leased June 1965. Purchased 11 February 1977. Lift 1 000 tons.

1 FLOATING WORKSHOP

— (Ex-US *YR 37*)

Built in 1942. Transferred March 1963 and by sale 11 February 1977. No engines.

1 FLOATING CRANE

Built in the Netherlands in 1907.

1 RIVER TRANSPORT

PRESIDENTE STROESSNER T 1

Possibly ex-*Adolfo Riquelene* of 150 tons. Ex-yacht built in 1901 and reconstructed in 1973-75. Of 10 knots. No armament.

1 SURVEY LAUNCH

Of 50 tons, launched in 1957. Complement 57.

1 BUOY TENDER

B 1

Of 30 tons, complement 12.

4 STORE CARRIERS

No details available.

2 Ex-US "LCU 501" CLASS

BT 1 (ex-US *YFB 82*) **BT 2** (ex-US *YFB 86*)

Built in 1945 and converted in 1960.
Leased by the USA in June 1970 and by sale 11 February 1977. Used as ferries.

3 DREDGERS

Name	No.	Displacement	Date launched	Officers	Crew
—	RP 1	107	1908	1	27
—	D 1	140	1907	2	28
TENIENTE OSCAR CARRERAS SAGUIER	D 2	110	1957	2	17

PERU

Ministerial

Minister of Defence:
General Jorge Muniz

Headquarters' Appointments

Minister of Marine and Chief of Naval Operations:
Vice-Admiral Carlos Tirado Alcorta
Chief of Naval Staff:
Vice-Admiral Juan Egusquiza Babilonia

Command

Commander-in-Chief of the Fleet:
Vice-Admiral José Montoya Carcelen

Diplomatic Representation

Naval Attaché in London and Paris:
Captain G. Barragan
Naval Attaché in Washington:
Vice-Admiral Julio Guinand Hturne

Personnel

(a) 1981: 20 500 (2 000 officers, 18 500 men) (including Naval Air Arm)
(b) 2 years' national service

Bases

Callao—Main naval base; dockyard with ship-building capacity, 1 dry dock, 2 floating docks, 1 floating crane; training schools
Iquitos—River base for Amazon Flotilla; small building yard, repair facilities, floating dock
La Punta (naval academy), San Lorenzo (submarine base), Talara, Puno (Lake Titicaca), Madre de Dios (river base)

Naval Air Arm

4 SH-3D Sea Kings (for *Aguirre*)
6 Bell AB 212 (for "Lupo" class)
2 Fokker 27 FPA MP aircraft
6 Bell UH-1 D/H helicopters
2 Alouette III helicopters
4 Bell 47G
9 Grumman S-2E (ASW)
2 Douglas C-47 (Transport)
1 Douglas DC-3
2 Cessna 150
6 Beech T-34-C (Training)
10 Bell Jet-Rangers

Following operated in maritime role by Peruvian Air Force:
4 Grumman HU-16B Albatros (ASW/SAR)

Marines

There is one brigade of 1 400 men, armed with amphibious vehicles (twin Oerlikon, 81 mm rocket launchers) and armoured cars.

Coast Guard

A separate service set up in 1975 with a number of light forces transferred from the navy.

Prefix to Ships' Names

BAP (Buque Armada Peruana)

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines—Patrol	10	2
Cruisers	3	—
Destroyers	8	—
Frigates	2	(2)
Fast Attack Craft—Missile	6	—
Lake/River Patrol Craft	9	—
Coastal Patrol Craft	—	6
River Gunboats	5	—
Landing Ships	6	—
Transports	2	—
Tankers	7	—
Survey Vessels	4	—
Floating Docks	4	—
Tugs	5	—
Water Carriers	3	—
Floating Workshop	1	—
Hospital Craft	3	—
S/M Accommodation Ship	1	—
Training Ship	1	—

Coast Guard

Corvettes	2	—
Large Patrol Craft	9	—
Coastal Patrol Craft	4	—

Mercantile Marine

Lloyd's Register of Shipping:
698 vessels of 740 510 tons gross

DELETIONS

Cruiser

1979 *Capitan Quiñones*

Destroyer

1980 *Villar* (for spares and scrap)

Frigate

1980 *Castilla*

Mine Warfare Forces

1974 *Bondy, San Martin* (ex-*YMS*)

River Gunboat

1978 *Napo*

Tanker

1979 *Bayovar* (sold to commercial owner)

Amphibious Forces

1975 3 LCUs, 10 LCAs

Floating Dock

1978 No 109 (first) lost on delivery voyage

PENNANT LIST

Submarines

S 31	Casma
S 32	Antofagasta
S 41	Dos de Mayo
S 42	Abtao
S 43	Angamos
S 44	Iquique
S 45	Islay
S 46	Arica
S 48	Pacocha
S 49	La Pedrera
—	Pisagua
—	Blume

Cruisers

CL 81	Almirante Grau
CL 82	Coronel Bolognesi
CL 84	Aguirre

Destroyers

DD 71	Castilla
DD 72	Guise
DD 73	Palaçios
DD 74	Ferre

Destroyers

DD 75	Garcia y Garcia
DD 76	Capitan Quiñones
DD 77	Villar

Frigates

F 51	Meliton Carvajal
F 52	Manuel Villavicencio
—	New Construction
—	New Construction

Light Forces

CF 11	Amazonas
CF 12	Loreto
CF 13	Maranon
CF 14	Ucayali
CF 15	America
P 21	Velarde
P 22	Santillana
P 23	De los Heros
P 24	Herrera
P 25	Larrea
P 26	Sanchez Carrion
P 250	Rio Zarumilla

Light Forces

P 251	Rio Tumbes
P 252	Rio Piura
PL 290	Rio Ramis
PL 291	Rio Ilave
PL 292	Rio Coata
PL 293	Rio Huancane

Amphibious Forces

141	Paita
142	Chimbote
145	Lomas
146	Atico

Auxiliaries

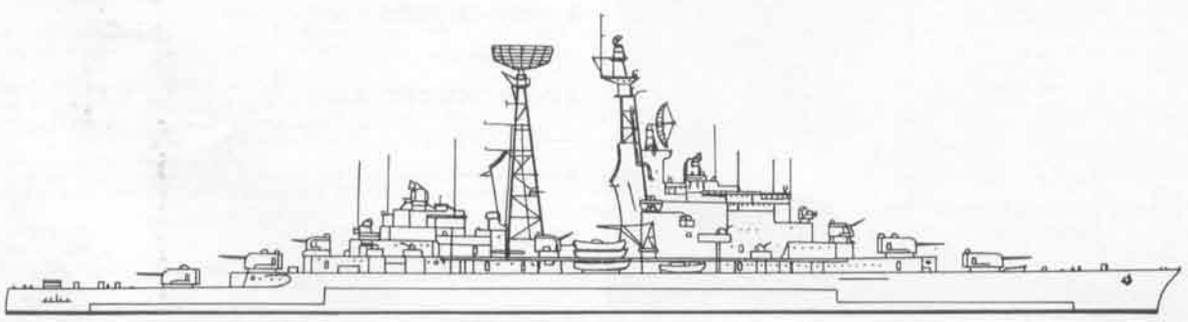
110	Mantilla
123	Guardian Rios
124	Franco
128	Olaya
129	Selendon
130	Independencia
131	Ilo
151	Mollendo
152	Talara
155	Parinas
156	Pimental

Auxiliaries

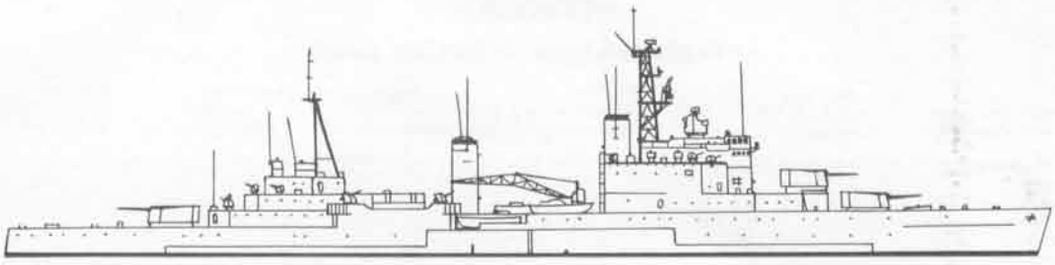
158	Zorritos
159	Lobitos
170	Unanue
171	Cardenas
184	Contramastre Navarro
302	Morona
—	Humboldt
DE 161	Training Ship
DE 163	Rodriquez

Coast Guard

220	Galvez
221	Diez Canseco
222	Rio Sama
223	Rio Chira
224	Rio Chicama
225	Rio Pativilca
226	Rio Huaura
227	Rio Locumba
228	Rio Ica
229	Rio Vitor
230	La Punta
231	Rio Chillon
232	Rio Santa
233	Rio Majes
234	Rio Canete



ALMIRANTE GRAU



CORONEL BOLOGNESI

SUBMARINES

4 + 2 TYPE 1200

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ISLAY	S 45	Howaldtswerke, Kiel	1971	1973	29 Aug 1974
ARICA	S 46	Howaldtswerke, Kiel	1972	17 Apr 1974	21 Jan 1975
CASMA	S 31	Howaldtswerke, Kiel	1977	31 Aug 1979	19 Dec 1980
ANTOFAGASTA	S 32	Howaldtswerke, Kiel	1978	1980	1981
PISAGUA	—	Howaldtswerke, Kiel	1978	—	1981
BLUME	—	Howaldtswerke, Kiel	1979	—	1982

Displacement, tons: 1 180 surfaced; 1 290 dived
Dimensions, feet (metres): 183·7 × 20·7 × 17·9 *(56 × 6·3 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)* (with reloads)
Main machinery: Diesel-electric; 4 MTU Siemens diesel-generators; 1 Siemens electric motor; 3 600 hp; 1 shaft
Speed, knots: 10 surfaced; 22 dived
Range: 50 days
Complement: 35 (S 45-6), 31 (others)

Designed by Ingenieurkontor, Lubeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal Essen all acting as a consortium.
A single-hull design with two ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. The single screw is slow revving, very high capacity batteries with GRP lead-acid cells and battery cooling—by Wilh. Hagen and VARTA. Active and passive sonar, sonar detection equipment, sound ranging gear and underwater telephone. Fitted with two periscopes, radar and Omega receiver. Foreplanes retract.
Islay ran trials in June 1974.
Two further boats ordered 12 August 1976 and two more ordered 21 March 1977.

ARICA *1975, Peruvian Navy*

2 Ex-US "GUPPY 1A" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PACOCHA (ex-USS *Atule* SS 403)	S 48	Portsmouth Navy Yard, USA	2 Dec 1943	6 Mar 1944	21 June 1944
LA PEDRERA (ex-*Pabellon de Pica*, ex-USS *Sea Poacher* SS 406)	S 49	Portsmouth Navy Yard, USA	23 Feb 1944	20 May 1944	31 July 1944

Displacement, tons: 1 870 standard; 2 440 dived
Dimensions, feet (metres): 308 × 27 × 17 *(93·8 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in *(533 mm)*; 6 bow, 4 stern
Main machinery: 3 diesels; 4 800 hp; 2 electric motors; 5 400 shp; 2 shafts
Speed, knots: 17 surfaced; 15 dived
Complement: 85

Modernised under the 1951 Guppy programme. Purchased by Peru—*La Pedrera* on 1 July 1974, *Pacocha* on 31 July 1974. The name of *La Pedrera* was changed a fortnight after purchase. Both became operational in 1975 after refit. Ex-USS *Tench* (SS 417) purchased for spares 16 September 1976.

LA PEDRERA (as *Sea Poacher*) *1966, Dr. Giorgio Arra*

4 "ABTAO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DOS DE MAYO (ex-*Lobo*)	S 41	General Dynamics (Electric Boat), Groton, Connecticut	12 May 1952	6 Feb 1954	14 June 1954
ABTAO (ex-*Tiburon*)	S 42	General Dynamics (Electric Boat), Groton, Connecticut	12 May 1952	27 Oct 1953	20 Feb 1954
ANGAMOS (ex-*Atun*)	S 43	General Dynamics (Electric Boat), Groton, Connecticut	27 Oct 1955	5 Feb 1957	1 July 1957
IQUIQUE (ex-*Merlin*)	S 44	General Dynamics (Electric Boat), Groton, Connecticut	27 Oct 1955	5 Feb 1957	1 Oct 1957

Displacement, tons: 825 standard; 1 400 dived
Dimensions, feet (metres): 243 × 22 × 14 *(74·1 × 6·7 × 4·3)*
Gun: 1—5 in *(127 mm)*/25 *(Abtao* and *Dos de Mayo)*
Torpedo tubes: 6—21 in *(533 mm)*; 4 bow, 2 stern
Main machinery: 2 General Motors 278A diesels; 2 400 bhp; electric motors; 2 shafts
Speed, knots: 16 surfaced, 10 dived
Oil fuel, tons: 45
Range, miles: 5 000 at 10 knots (surfaced)
Complement: 40

They are of modified US "Mackerel" class. Refitted at Groton as follows—*Dos de Mayo* and *Abtao* in 1965, other pair in 1968.

ABTAO *1975, Peruvian Navy*

CRUISERS

2 Ex-NETHERLANDS "DE RUYTER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ALMIRANTE GRAU (ex-HrMS *De Ruyter*)	CL 81 (ex-83)	Wilton-Fijenoord, Schiedam	5 Sep 1939	24 Dec 1944	18 Nov 1953
AGUIRRE (ex-HrMS *De Zeven Provincien*)	CL 84	Rotterdamse Droogdok Maatschappij	19 May 1939	22 Aug 1950	17 Dec 1953

Displacement, tons: 9 529 standard; 12 165 full load *(Grau)*; 9 850 and 12 250 *(Aguirre)*
Dimensions, feet (metres): 609 × 56·7 × 22 *(185·6 × 17·3 × 6·7) (Grau* length 624·5 *(190·3))*
Aircraft: 3 helicopters *(Aguirre)*
Guns: 8—6 in *(150 mm)*/53 (twin); 8—57 mm/60 (twin); 8—40 mm/70 *(Grau)*
4—6 in *(150 mm)*/53 (twin); 6—57 mm/60 (twin); 4—40 mm/70 *(Aguirre)*
Main engines: 2 De Schelde-Parsons geared turbines; 85 000 shp; 2 shafts
Boilers: 4 Werkspoor-Yarrow
Speed, knots: 32
Complement: 953 (49 officers, 904 ratings)

Almirante Grau transferred by purchase 7 March 1973 and *Aguirre* bought August 1976.
Almirante Grau commissioned in Peruvian Navy 23 May 1973 and sailed for Peru 18 June 1973.

Aircraft: Three Sea Kings carried aboard *Aguirre* with spare ashore. Hangar measures 67 × 54 ft and the flight deck 115 × 56 ft. Second landing spot on hangar.

Reconstruction: After sale *Aguirre* was taken in hand by her original builders for conversion to a helicopter cruiser. The Terrier missile system has been returned to the USA and a helicopter flight deck with a hangar has been built from midships to the stern. Conversion completed 31 October 1977. Sailed March 1978.

Radar: Search: LW-01.
Height finder: SGR 104 *(Grau)*.
Tactical: DA 02.
Fire control: HSA M25 for 6-in guns and M45 for secondary battery.
Navigation: ZW-01.

AGUIRRE *1978, Bewapeningswerkplaatsen*

ALMIRANTE GRAU *1976, Dr. Robert Scheina*

AGUIRRE *1978, H. W. van Boeijen*

1 Ex-BRITISH "CEYLON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
CORONEL BOLOGNESI (ex-HMS *Ceylon*)	CL 82	Alexander Stephen & Sons Ltd, Govan, Glasgow	27 Apr 1939	30 July 1942	13 July 1943

Displacement, tons: 8 781 standard; 11 110 full load
Dimensions, feet (metres): 555·5 × 62 × 20·5 *(169·3 × 18·9 × 6·2)*
Guns: 9—6 in *(152 mm)*/50 (triple Mk 23); 8—4 in *(102 mm)*/45 (twin Mk 19); 18—40 mm/60
Armour: 3·5 in *(89 mm)* sides; 2 in *(51 mm)* turrets and deck
Main engines: Parsons geared turbines; 72 500 shp; 4 shafts
Boilers: 4 Admiralty 3-drum; 400 psi *(28 kg/cm²)*; 720°F *(382°C)*
Speed, knots: 31·5
Oil fuel, tons: 1 620
Range, miles: 6 000 at 13 knots; 2 000 at full power
Complement: 766

CL 82 was transferred as *Coronel Bolognesi* on 9 February 1960.

Radar: Search: Types 960, 277 and 293.
Fire control: Types 284, 275.

CORONEL BOLOGNESI

Reconstruction: Modified in 1955-56 with lattice foremast and covered bridge, her torpedo tubes being removed.

DESTROYERS

2 Ex-BRITISH "DARING" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
PALACIOS (ex-HMS *Diana*)	DD 73	Yarrow Co Ltd, Scotstoun	3 Apr 1947	8 May 1952	29 Mar 1954
FERRE (ex-HMS *Decoy*)	DD 74	Yarrow Co Ltd, Scotstoun	22 Sep 1946	29 Mar 1949	28 Apr 1953

Displacement, tons: 2 800 standard; 3 600 full load
Dimensions, feet (metres): 390 × 43 × 18 *(118·9 × 13·1 × 5·5)*
Missiles: SSM: 8 Exocet (single cells)
Guns: 4—4·5 in *(115 mm)*/45 (twin Mk 6);
4—40 mm/60 (twin Mk 5)
Main engines: English Electric dr geared turbines; 2 shafts
Boilers: 2 Foster-Wheeler; pressure 650 psi *(45·7 kg/cm²)*; superheat 850°F *(454°C)*
Oil fuel, tons: 580
Speed, knots: 32
Range, miles: 3 000 at 20 knots
Complement: 297

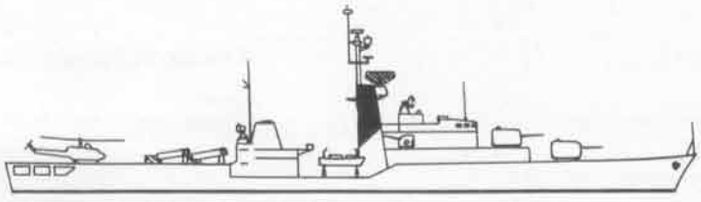
Purchased by Peru in 1969 and refitted by Cammel Laird (Ship Repairers) Ltd, Birkenhead, for further service.

Reconstruction: The first major reconstruction was carried out in 1970-73. The main points of this refit were the reconstructed and enclosed foremast carrying Plessey AWS-1 radar and the Exocet launcher positions in place of the Close Range Blind Fire Director forward of X Turret.
Commissioned after refit—*Palacios* February 1973. *Ferré* April 1973.
The next major change took place 1975-76 when the Squid was removed to make way for a helicopter landing deck.
The third reconstruction was in 1977-78 when X-turret was removed to allow for a larger helicopter deck. The two 40 mm guns were replaced by two twin 40 mm Breda-Bofors L70 Compact. The bridge was enclosed, the after funnel remodelled and new fire control system fitted. It is reported that a hangar has replaced the Exocets which have been sited forward of the after funnel.

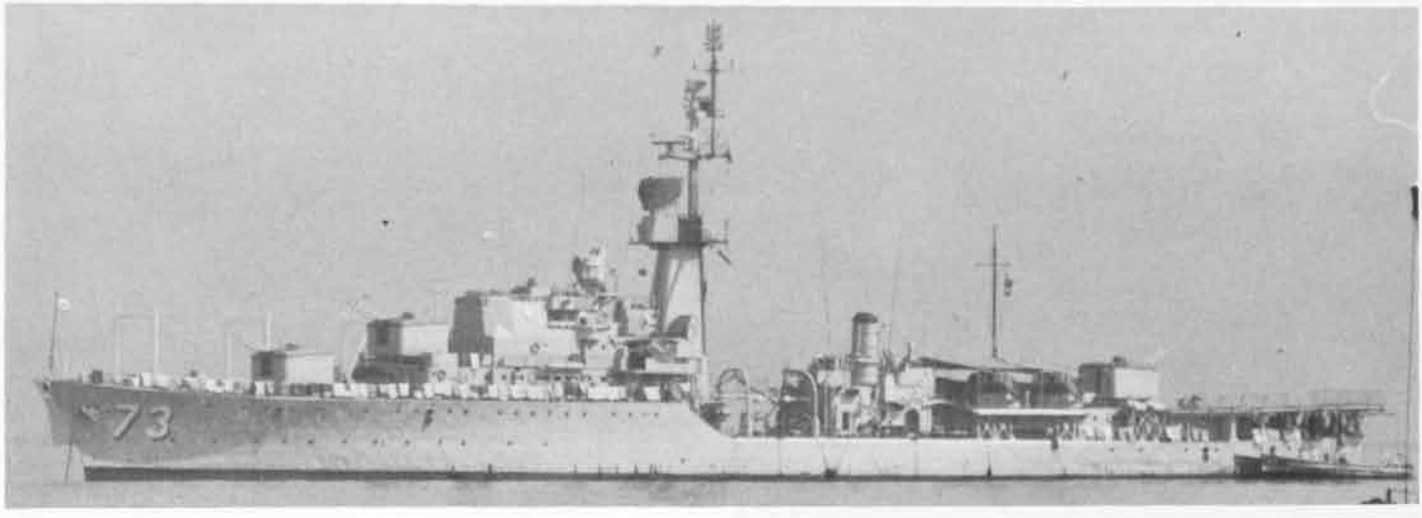
Radar: Fire control: TSF on fore-funnel.
Search: Plessey AWS 1.

FERRÉ (after first reconstruction)

1975, Michael D. J. Lennon



"DARING" Class (after third reconstruction—see notes)



PALACIOS (after second reconstruction)

1976, Dr. Robert L. Scheina

4 Ex-NETHERLANDS "FRIESLAND" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
CASTILLA (ex-HrMs *Utrecht* DD 817)	DD 71	Koninklijke Maatschappij de Schelde, Flushing	15 Feb 1954	2 June 1956	1 Oct 1957
CAPITAN QUIÑONES (ex-HrMs *Limburg* DD 814)	DD 76	Koninklijke Maatschappij de Schelde, Flushing	28 Nov 1953	5 Sep 1955	31 Oct 1956
VILLAR (ex-HrMs *Amsterdam* DD 819)	DD 77	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	26 Mar 1955	25 Aug 1956	10 Aug 1958
— (ex-HrMs *Groningen* DD 813)	DD —	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	21 Feb 1952	9 Jan 1954	12 Sep 1956

Displacement, tons: 2 497 standard; 3 070 full load
Dimensions, feet (metres): 380·5 × 38·5 × 17 *(116 × 11·7 × 5·2)*
Guns: 4—4·7 in *(120 mm)*/50 twin Bofors; 4—40 mm/70 (single)
A/S weapons: Two 4-barrelled 375 mm Bofors rocket launchers; 2 DC racks
Main engines: 2 Werkspoor geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 36
Complement: 284

Castilla re-commissioned 6 October 1980, *Capitan Quiñones* 27 June 1980, *Villar* 23 May 1980 and ex-*Groningen* early 1981.

Radar: Search: LW-03.
Tactical: DA 05.
Fire control: M 45 for 4·7-in guns.

Sonar: CWE 10-N, PAE 1-N.

VILLAR

8/1980, Lieutenant Borgeld

1 Ex-NETHERLANDS "HOLLAND" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
GARCIA y GARCIA (ex-HrMs *Holland*)	DD 75 (ex-D 808)	Rotterdamse Droogdok Mij, Rotterdam	21 Apr 1950	11 Apr 1953	31 Dec 1954

Displacement, tons: 2 765 full load
Dimensions, feet (metres): 371·1 × 37·5 × 16·8 *(113·1 × 11·4 × 5·1)*
Guns: 4—4·7 in *(120 mm)*; 1—40 mm
A/S weapons: Two 4-barrelled 375 mm, Bofors rocket launchers; 2 DC racks
Main engines: 2 Werkspoor Parsons geared turbines; 2 shafts; 45 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 32
Complement: 247

Sold to Peru on 2 January 1978 and re-commissioned 20 January 1978.

Gunnery: The 4·7-in guns are fully automatic with a rate of fire of 42 rounds per minute. All guns are radar controlled.

Radar: Search: LW 03.
Tactical: DA 02.
Fire control: HSA M 45 for 4·7-in.
HSA fire control for A/S rocket launcher.

GARCIA y GARCIA

2/1978, H. W. van Boeijen

1 Ex-US "FLETCHER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
GUISE (ex-USS *Isherwood*, DD 520)	DD 72	Bethlehem Steel Co, Staten Island	12 May 1942	24 Nov 1942	10 Apr 1943

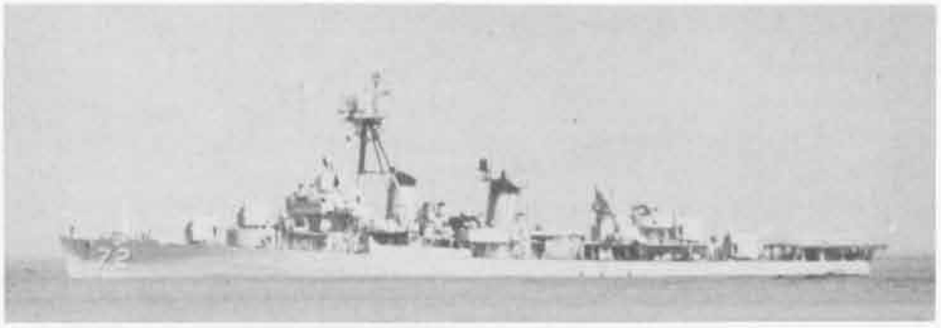
Displacement, tons: 2 120 standard; 3 050 full load
Dimensions, feet (metres): 376·2 × 39·7 × 18 *(114·7 × 12·1 × 5·5)*
Guns: 4—5 in *(127 mm)*/38 (single Mk 30);
6—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 2 fixed Hedgehogs;
2 side-racks for A/S torpedoes
Torpedo tubes: 5—21 in *(533 mm)* (quin)
Main engines: 2 GE impulse reaction geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox; 600 psi *(42 kg/cm²)*; 850°F *(455°C)*
Speed, knots: 34
Oil fuel, tons: 650
Range, miles: 5 000 at 15 knots; 900 at full power
Complement: 245 (15 officers and 230 men)

Two other "Fletcher" class, ex-USS *La Vallette* (DD 448) and *Terry* (DD 513) were transferred for spares in July 1974.

Helicopter: A helicopter deck without hangar or fuelling facilities was fitted on the quarter-deck in 1975-76.

Radar: Search: SPS 6, SPS 10.•
Fire control: GFCS 68 system forward, GFCS 56 system aft.

Transfer: Transferred from the US Navy to the Peruvian Navy at San Diego, California, on 15 December 1960.



GUISE (note helicopter deck on stern)

1976, Dr. Robert Scheina

FRIGATES

2 + (2) ITALIAN "MODIFIED LUPO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MELITON CARVAJAL	F 51	Cantieri Navali Riuniti, Riva Trigoso	8 Aug 1974	17 Nov 1976	5 Feb 1979
MANUEL VILLAVICENCIO	F 52	Cantieri Navali Riuniti, Riva Trigoso	6 Oct 1976	Feb 1978	25 June 1979
—	—	SIMAC Peru	—	—	—
—	—	SIMAC Peru	—	—	—

Displacement, tons: 2 208 standard; 2 500 full load
Dimensions, feet (metres): 371·3 × 37·1 × 12·1 *(113·2 × 11·3 × 3·7)*
Aircraft: 1 helicopter
Missiles: SSM: 8 Otomat (single cells);
SAM: 8 Albatros/Aspide (octuple launcher) (see note)
Guns: 1—5 in *(127 mm)*/54 (single Compact);
4—40 mm/70 (twin Compact) (see notes)
Rocket launchers: 2—105 mm Breda ELSAG multi-purpose 20-barrelled launchers
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes (port and starboard)
Main engines: CODOG with 2 GE Fiat LM 2500 gas turbines; 50 000 hp; 2 Fiat 20-cyl A 230 diesels; 7 800 hp
Speed, knots: 35

In the design for the pair to be built in Callao there are only two 40 mm (mounted higher) and reloading of the Albatros is by hand not power. The construction of these two ships has not, apparently, begun although some reports suggest that they were laid down in 1977.

MELITON CARVAJAL

1979, CNR

LIGHT FORCES

6 "PR-72P" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
VELARDE	P 21	SFCN, France	25 July 1980
SANTILLANA	P 22	SFCN, France	25 July 1980
DE LOS HEROS	P 23	SFCN, France	17 Nov 1980
HERRERA	P 24	SFCN, France	1980
LARREA	P 25	SFCN, France	1981
SANCHEZ CARRION	P 26	SFCN, France	1981

Displacement, tons: 470 standard; 560 full load
Dimensions, feet (metres): 210 × 27·4 × 5·2 *(64 × 8·4 × 2·6)*
Missiles: SSM: 4 Exocet (single cells)
Guns: 1—76/62 mm OTO Melara; 2—40/70 Breda/Bofors (twin); 2—20 mm Oerlikon
Main engines: 4 SACM AGO 240V16 diesels; 22 000 shp; 4 shafts = 34 knots
Range, miles: 2 500 at 16 knots
Complement: 36

Ordered late 1976 from SFCN, France. Hulls of P 21, 23, 25 sub-contracted to Lorient Naval Yard, the others being built at Villeneuve-la-Garonne.
Launched—P 21, 16 Sep 1978; P 22, 11 Sep 1978; P 23, 20 May 1979; P 24, 16 Feb 1979; P 25, 12 May 1979; P 26, 28 June 1979.

Radar: Search: Thomson-CSF Triton.
Fire control: Thomson-CSF Vega/Castor II.
Navigation: Decca 1226.

1 RIVER GUNBOAT

Name	No.	Builders	Commissioned
AMERICA	CF 15	Tranmere Bay Development Co Ltd, Birkenhead	1904

Displacement, tons: 240
Dimensions, feet (metres): 133 × 19·5 × 4·5 *(40·6 × 5·9 × 1·4)*
Guns: 2—40 mm; 4—20 mm
Main engines: Triple expansion; 350 ihp = 14 knots
Complement: 26

Built of steel. Converted from coal to oil fuel burning. In the Upper Amazon Flotilla. The river gunboat *Iquitos* was discarded in 1967, after 92 years' service. *America* now reported non-operational after only 77 years.

AMERICA *Peruvian Navy*

2 "MARAÑON" CLASS (RIVER GUNBOATS)

Name	No.	Builders	Commissioned
MARAÑON	CF 13	John I. Thornycroft & Co Ltd	July 1951
UCAYALI	CF 14	John I. Thornycroft & Co Ltd	June 1951

Displacement, tons: 365 full load
Dimensions, feet (metres): 154·8 wl × 32 × 4 *(47·2 × 9·7 × 1·2)*
Guns: 2—3 in/50; 3—40 mm; 2—20 mm
Main engines: British Polar M 441 diesels; 800 bhp = 12 knots
Range, miles: 6 000 at 10 knots
Complement: 40

Ordered early in 1950 and both laid down in early 1951. Employed on police duties in Upper Amazon. Superstructure of aluminium alloy. Based at Iquitos.

UCAYALI (before re-armament) *1975, Peruvian Navy*

2 "LORETO" CLASS (RIVER GUNBOATS)

Name	No.	Builders	Commissioned
AMAZONAS	CF 11	Electric Boat Co, Groton	1935
LORETO	CF 12	Electric Boat Co, Groton	1935

Displacement, tons: 250 standard
Dimensions, feet (metres): 145 × 22 × 4 *(44·2 × 6·7 × 1·2)*
Guns: 2—3 in; 4—40 mm; 2—20 mm
Main engines: Diesel; 750 bhp = 15 knots
Range, miles: 4 000 at 10 knots
Complement: 35

Launched in 1934. In Upper Amazon Flotilla.

LORETO (before re-armament) *1973, Peruvian Navy*

3 RIVER PATROL CRAFT

Name	No.	Builders	Commissioned
RIO ZARUMILLA	P 250 (ex-*01*)	Viareggio, Italy	5 Sep 1960
RIO TUMBES	P 251 (ex-*02*)	Viareggio, Italy	5 Sep 1960
RIO PIURA	P 252 (ex-*04*)	Viareggio, Italy	5 Sep 1960

Displacement, tons: 37 full load
Dimensions, feet (metres): 65·7 × 17 × 3·2 *(20 × 5·2 × 1)*
Guns: 2—40 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 200 bhp = 18 knots

Ordered in 1959 as a class of four laid down on 15 July 1959. Stationed at El Salto on Ecuadorian border.

RIO PIURA *1975, Peruvian Navy*

2 LAKE PATROL CRAFT

19 (ex-m/v *Yavari*) **306** (ex-m/v *Yapura*)

Both built by Cammell Laird UK, *19* in 1862 and *306* in 1870. Both were shaken down and re-assembled at Puno, Lake Titicaca, *19* commissioning there in 1871 and *306* in 1873. Both served in the Peruvian Navy until 1883 when they were sold for commercial use. Their recent re-introduction to the Peruvian navy on Lake Titicaca means that they are the oldest operational ships in this book—118 and 110 years old. Both are now diesel driven, averaging 8-10 knots with engines of 320 and 480 hp respectively. Both are 500 tons gross, *19* being 157 ft long and *306*, 125 ft. *306* used as hospital ship.

0 + 6 COASTAL/LAKE PATROL CRAFT

Of unknown characteristics reported as ordered from McLaren, Niteroi, Brazil, possibly in 1977.

4 LAKE PATROL CRAFT

RIO RAMIS PL 290 **RIO ILAVE** PL 291

Of 12 tons with light machine guns. Complement four.

RIO COATA PL 292 **RIO HUANCANE** PL 293

Of 10 tons. Complement four.

RIO RAMIS and RIO ILAVE on Lake Titicaca *1973, Peruvian Navy*

AMPHIBIOUS FORCES

1 Ex-US "LST 1-510" CLASS

Name	*No.*	*Builders*	*Commissioned*
CHIMBOTE (ex-M/S *Rawhiti*, ex-US *LST 283*)	142	American Bridge Co Ambridge, Penn	18 Nov 1943

Displacement, tons: 1 625 standard; 3 640 full load
Dimensions, feet (metres): 328 × 50 × 14·1 *(100 × 15·3 × 4·3)*
Gun: 1—3 in
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 10 knots
Oil fuel, tons: 600 oil tanks; 1 100 ballast tanks
Range, miles: 9 500 at 9 knots
Complement: 116 (9 officers and 107 men)
Troops: 133

Laid down on 2 August 1943, launched on 10 October 1943. Sold to Peru by a British firm in March 1947. Served commercially until 1951 when she was transferred to the Peruvian Navy.

2 Ex-US "LST 511-1152" CLASS

Name	*No.*	*Builders*	*Commissioned*
PAITA (ex-USS *Burnett County*, LST 512)	141 (ex-*AT 4*)	Chicago Bridge & Iron Co	8 Jan 1944
SALAVERRY (ex-m/v *Iquitos*, ex-m/v *Carpine*, *ex-LST –*)	?	Dravo Corp, Pittsburgh	1943

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14·5 *(100 × 15·3 × 4·4)*
Guns: 6—20 mm
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 10 knots
Range, miles: 9 500 at 9 knots
Complement: 118 (9 officers, 109 men)
Troops: 134

Paita laid down on 29 July 1943. Launched on 10 December 1943. Purchased by Peru in September 1957. Unique deck-house forward of bridge. Helicopters are operated from upper deck amidships.
In late 1977 *Salaverry* was acquired from a commercial firm.

PAITA (old pennant number) *1976, Dr. Robert Scheina*

2 Ex-US "LSM 1" CLASS

Name	*No.*	*Builders*	*Commissioned*
LOMAS (ex-US *LSM 396*)	145	Charleston Navy Yard	23 Mar 1945
ATICO (ex-US *LSM 554*)	146	Charleston Navy Yard	14 Sep 1945

Displacement, tons: 513 standard; 913 full load
Dimensions, feet (metres): 203·5 × 34·5 × 7 *(62·1 × 10·5 × 2·1)*
Guns: 2—40 mm; 4—20 mm
Main engines: Diesels; 2 shafts; 3 600 bhp = 12 knots
Range, miles: 5 000 at 7 knots
Complement: Accommodation for 116 (10 officers and 106 men)

Purchased in 1959.

LOMAS (old pennant number) *1975, Peruvian Navy*

SERVICE FORCES

Note: All tankers may be used for commercial purposes by Petroperu if not required for naval use.

1 Ex-US "BELLATRIX" CLASS (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
INDEPENDENCIA (ex-USS *Bellatrix*, AKA 3, ex-*Raven*, AK 20)	130 (ex-*21*)	Tampa Shipbuilding Co, Tampa, Florida	1941

Displacement, tons: 6 194 light
Dimensions, feet (metres): 459 × 63 × 26·5 *(140 × 19·2 × 8·1)*
Guns: 1—5 in/38; 3—3 in/50; 10—20 mm
Main engine: 1 Nordberg diesel; 1 shaft; 6 000 bhp = 16·5 knots

Former US attack cargo ship. Transferred to Peru at Bremerton, Washington on 20 July 1963 under the Military Aid Programme. Training ship for the Peruvian Naval Academy.

Radar: Air search: SPS 6.
Navigation: Decca.

INDEPENDENCIA *1977, Michael D. J. Lennon*

1 "ILO" CLASS (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
ILO	131	Servicio Industrial de la Marina, Callao	Dec 1971

Displacement, tons: 18 400 full load
Measurement, tons: 13 000 deadweight
Dimensions, feet (metres): 507·7 × 67·3 × 27·2 *(154·8 × 20·5 × 8·3)*
Main engines: Diesels
Speed, knots: 15·6

The *Ilo* is used from time to time for commercial purposes. Her sister ship *Rimac* was launched at the same yard on 12 December 1971 and transferred from the navy for commercial use by State Shipping Company (CPV) on "bare-boat charter" in 1973.

ILO *11/1980, L. and L. van Ginderen*

1 "TALARA" CLASS (REPLENISHMENT TANKER)

Name	*No.*	*Builders*	*Commissioned*
TALARA	152	Servicio Industrial de la Marina, Callao	23 Jan 1978

Measurement, tons: 25 000 deadweight
Dimensions, feet (metres): 561·5 × 82 × 31·2 *(171·2 × 25 × 9·5)*
Main engines: Diesels; 12 000 hp
Speed, knots: 15·5

Cargo space 35 662 cubic metres. *Talara* laid down 1975, launched 9 July 1976. *Bayovar* laid down 9 July 1976, launched 18 July 1977 having been originally ordered by Petroperu (State Oil Company) and transferred to the navy while building. Sold back to Petroperu in 1979 and renamed *Pavayacu*. A third, *Trompeteros*, of this class has been built for Petroperu.

2 "PARINAS" CLASS (REPLENISHMENT TANKERS)

Name	*No.*	*Builders*	*Commissioned*
PARINAS	155	Servicio Industrial de la Marina, Callao	13 June 1968
PIMENTEL	156	Servicio Industrial de la Marina, Callao	27 June 1969

Displacement, tons: 3 434 light; 13 600 full load
Measurement, tons: 10 000 deadweight
Dimensions, feet (metres): 410·9 × 63·1 × 26 *(125·3 × 19·2 × 7·9)*
Main engine: Burmeister & Wain Type 750 diesel; 5 400 bhp = 14·5 knots

PARINAS *1975, Peruvian Navy*

2 "SECHURA" CLASS (SUPPORT TANKERS)

Name	*No.*	*Builders*	*Commissioned*
ZORRITOS	158	Servicio Industrial de la Marina, Callao	1959
LOBITOS	159	Servicio Industrial de la Marina, Callao	1966

Displacement, tons: 8 700 full load
Measurement, tons: 4 300 gross; 6 000 deadweight
Dimensions, feet (metres): 385 × 52 × 21·2 *(117·4 × 15·9 × 6·4)*
Main engines: Burmeister & Wain diesels; 2 400 bhp = 12 knots
Boilers: 2 Scotch with Thornycroft oil burners for cargo tank cleaning

Zorritos launched 8 October 1958, *Lobitos* May 1965.

Radar: Navigation: Decca.

LOBITOS *1975, Peruvian Navy*

1 SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
MOLLENDO (ex-*Amalienborg*)	151	Japan	Sep 1962

Displacement, tons: 6 084 standard; 25 670 full load
Dimensions, feet (metres): 534·8 × 72·2 × 30 *(164·3 × 22 × 9·2)*
Main engines: 674-VTFS-160 diesels; 7 500 bhp = 14·5 knots

This Japanese built tanker, completed September 1962, was acquired by Peru in April 1967.

MOLLENDO *1975, Peruvian Navy*

1 HARBOUR TANKER

— (Ex-US *YO 221*)

Transferred to Peru February 1975.

SURVEY AND OCEANOGRAPHIC VESSELS

1 OCEANOGRAPHIC SHIP

Name	*No.*	*Builders*	*Commissioned*
HUMBOLDT	—	SIMAC, Callao, Peru	1980

Displacement, tons: 1 980
Dimensions, feet (metres): 249·6 × 41·7 × 14·4 *(76·1 × 12·7 × 4·4)*
Main engines: 2 diesels; 3 000 hp = 14 knots
Complement: 48

Laid down 3 January 1977, launched 13 October 1978.

1 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
UNANUE (ex-USS *Wateree, ATA 174*)	170	Levingston S.B. Co, Orange, Texas	20 July 1944

Displacement, tons: 534 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Main engines: General Motors diesel-electric; 1 500 bhp = 13 knots
Complement: 39

Former US auxiliary ocean tug. Laid down on 5 October 1943, launched on 18 November 1943. Purchased from the USA in November 1961 under MAP.

CARDENAS (ex-US *YP 99*) 171

Of 19 tons, launched in 1950, with a complement of 11. Transferred November 1958. Stationed on Lake Titicaca.

1 RESEARCH CRAFT

Of 77 ft *(23·5 m)* with accommodation for 16 operated on the Amazona by El Instituto del Mar (Ministry of Marine). Commissioned May 1976.

SUBMARINE ACCOMMODATION SHIP

1 Ex-US "CANNON" CLASS

Name	*No.*	*Builders*	*Commissioned*
RODRIQUEZ (ex-USS *Weaver*, DE 741)	DE 163	Western Pipe & Steel Co, San Pedro, California	30 Nov 1943

Displacement, tons: 1 240 standard; 1 900 full load
Dimensions, feet (metres): 306 × 36·9 × 14·1 *(93·3 × 11·2 × 4·3)*
Guns: 3—3 in *(76 mm)*/50 (single Mk 22); 6—40 mm/60 (twin Mk 1); 10—20 mm
A/S weapons: 1 Mk 10 Hedgehog; 8 K mortars; 2 DC racks aft
Main engines: 4 General Motors diesel-electric sets 6 000 hp; 2 shafts
Speed, knots: 21
Range, miles: 10 500 at 12 knots
Complement: 172 (12 officers and 160 men)

Transferred to Peru on 26 October 1951, under the Mutual Defence Assistance Programme. Reconditioned and modernised at Green Cove Springs and Jacksonville, Florida. Arrived in Peru on 24 May 1952.
Used as submarine accommodation ship. Sister ship ex-*Aguirre* stripped of armament and some upperworks—now serves as floating electrical power-station.

TRAINING SHIP

1 Ex-US "CANNON" CLASS

Name	*No.*	*Builders*	*Commissioned*
— (ex-USS *Bangust*, DE 739, ex-*Castilla*)	DE 161	Western Pipe & Steel Co, San Pedro, California	30 Oct 1943

Details as for *Rodriquez*. Used as training ship at Iquitos.

TUGS

1 Ex-US "CHEROKEE" CLASS

Name	*No.*	*Builders*	*Commissioned*
GUARDIAN RIOS (ex-USS *Pinto*, ATF 90)	123	USA	1943

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Main engines: 4 General Motors diesel-electric; 3 000 bhp = 15 knots

Launched on 5 January 1943. Transferred to Peru in 1960 and delivered in January 1961. Fitted with powerful pumps and other salvage equipment.

CONTRAMASTRE NAVARRO 184

50 ton tug for Amazon Flotilla built in Peru in 1973.

Name	*No.*	*Builders*	*Commissioned*
OLAYA	128	Ruhrorter, SW. Duisburg	1967
SELENDON	129	Ruhrorter, SW. Duisburg	1967

Measurement, tons: 80 gross
Dimensions, feet (metres): 61·3 × 20·3 × 7·4 *(18·7 × 6·2 × 2·3)*
Main engines: 600 hp = 10 knots

Name	*No.*	*Builders*	*Commissioned*
FRANCO (ex-USS *Iwana*, YTM2)	124	City Point Iron Works, Boston, USA	1892

Displacement, tons: 192
Dimensions, feet (metres): 92·6 pp × 20·1 × 8 *(28·2 × 6·4 × 2·4)*

Laid down April 1891. Transferred March 1946.

3 RIVER HOSPITAL CRAFT

Name	*No.*	*Builders*	*Commissioned*
MORONA	302	SIMAI, Iquitos	1976
—	—	SIMAI, Iquitos	1977
—	—	SIMAI, Iquitos	1979

Displacement, tons: 150
Dimensions, feet (metres): 98·4 × 19·6 × 1·5 *(30 × 6 × 0·5)*

For service on Peruvian rivers.

MORONA *1976, Dr. Robert Scheina*

1 FLOATING DOCK

AFD 109

Displacement, tons: 15 000
Dimensions, feet (metres): 639·7 × 137·7 × 55·7 *(195 × 42 × 17)*

First ordered in West Germany 13 February 1978. The first AFD 109 lost under tow in 1978 and replaced by a similar dock in 1979.
Can be extended to 225 metres and 18 000 tons displacement.

1 FLOATING DOCK

AFD 106 (ex-*AFD 111*, ex-*WY 19*, ex-US *AFDL 33*)

Displacement, tons: 1 900
Dimensions, feet (metres): 288 × 64 × 8·2/31·5 *(87·8 × 19·5 × 2·5/9·6)*

Launched in October 1944. Transferred July 1959.

1 FLOATING DOCK

AFD 107 (ex-*AFD 112*, ex-*WY 20*, ex-US *ARD 8*)

Displacement, tons: 5 200
Dimensions, feet (metres): 492 × 84 × 5·7/33·2 *(150·1 × 25·6 × 1·7/10·1)*

Transferred February 1961.

1 SMALL FLOATING DOCK

AFD 108

Dimensions, feet (metres): 194 × 61·3 × ? *(59·2 × 18·7 × ?)*
Lift: 600 tons

Built by John I. Thornycroft, Southampton in 1951. Based at Iquitos.

1 FLOATING WORKSHOP

105 (ex-US *YR 59*)

Transferred 8 August 1961.

1 FLOATING CRANE

At Callao; of 120 tons capacity.

3 WATER CARRIERS

Name	*No.*	*Builders*	*Commissioned*
MANTILLA (ex-US *YW 22*)	110 (ex-*141*)	Henry C. Grebe & Co Inc, Chicago, Illinois	1945

Displacement, tons: 1 235 full load
Dimensions, feet (metres): 174 × 32 × — *(52·3 × 9·8 × —)*
Gun: 1 MG fwd
Speed, knots: 8
Capacity, gallons: 200 000

Former US water barge. Lent to Peru in July 1963.

ABA 091

Built in Peru 1972. Attached to Amazon Flotilla. Capacity 800 tons water.

ABA 113

Of 300 tons. Built in Peru 1972.

Names of other unidentified types: *Duenas, Noguera, Neptuno, Carrillo, Jupiter, Robles, Tapuina, Pina, Sandoval, Gaudin, Andrade.*

COAST GUARD

Note: In addition to the ships listed below there are eleven minor patrol craft with the Coast Guard.

2 Ex-US "AUK" CLASS

Name	*No.*	*Builders*	*Commissioned*
GALVEZ (ex-USS *Ruddy*, MSF 380)	220 (ex-*68*)	Gulf Shipbuilding Corporation	28 Apr 1945
DIEZ CANSECO (ex-USS *Shoveller*, MSF 382)	221 (ex-*69*)	Gulf Shipbuilding Corporation	28 June 1945

Displacement, tons: 1 090 standard; 1 250 full load
Dimensions, feet (metres): 221·2 × 32·2 × 10·8 *(67·5 × 9·8 × 3·3)*
Guns: 1—3 in/50; 2—40 mm
A/S weapons: 1 Hedgehog
Main engines: Diesel-electric; 2 shafts; 3 532 bhp = 18 knots
Range, miles: 4 300 at 10 knots
Complement: 100

Recommissioned at San Diego, California, and transferred to the Peruvian Navy under the Mutual Defence Assistance Programme on 1 November 1960. Sonar equipment was fitted so that they could be used as patrol vessels. Both purchased by Peru in 1974. Transferred to the Coast Guard Service in 1975. Both still capable of minesweeping.

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
RIO CANETE	234	SIMAC, Peru	1 Apr 1976

Displacement, tons: 298 full load
Dimensions, feet (metres): 166·8 × 24·8 × 5·6 *(50·6 × 7·4 × 1·7)*
Gun: 1—40 mm
Main engines: 4—MTU diesels; 5 640 hp; 2 shafts = 22 knots
Range, miles: 3 050 at 17 knots
Complement: 39

Rio Canete launched 8 August 1974. Of Bazán PGCP-50 project.

6 VOSPER TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
RIO CHICAMA (ex-*Velarde*)	224 (ex-21)	Vosper Ltd, Portsmouth	1965
RIO PATIVILCA (ex-*Santillana*)	225 (ex-22)	Vosper Ltd, Portsmouth	1965
RIO HUAURA (ex-*De los Heros*)	226 (ex-23)	Vosper Ltd, Portsmouth	1965
RIO LOCUMBA (ex-*Herrera*)	227 (ex-24)	Vosper Ltd, Portsmouth	1965
RIO ICA (ex-*Larrea*)	228 (ex-25)	Vosper Ltd, Portsmouth	1965
RIO VITOR (ex-*Sanchez Carrion*)	229 (ex-26)	Vosper Ltd, Portsmouth	1965

Displacement, tons: 100 standard; 130 full load
Dimensions, feet (metres): 109·7 × 21 × 5·7 *(33·5 × 6·4 × 1·7)*
Guns: 2—40 mm
A/S weapons: DC racks
Main engines: 2 Napier Deltic 18-cyl. turbocharged diesels; 6 200 bhp = 30 knots
Range, miles: 1 100 at 15 knots
Complement: 25 (4 officers and 21 ratings)

Of all-welded steel construction with aluminium upperworks. Equipped with Vosper roll damping fins, Decca Type 707 true motion radar, comprehensive radio, up-to-date navigation aids, sonar, and air-conditioning. The first boat, 229, was launched on 10 July 1964, the last, 227, on 18 February 1965. Last arrived Callao 1 December 1965. Can be armed as gunboat, torpedo boat (four side-launched torpedoes) or minelayer. A twin rocket projector can be fitted forward instead of gun. All transferred to the Coast Guard Service in 1975 and renamed.

RIO VITOR (old pennant number) *1971, Peruvian Navy*

2 US "PGM 71" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
RIO SAMA (ex-US *PGM 78*)	222 (ex-*PC 11*)	Peterson Builders, USA	Sep 1966
RIO CHIRA (ex-US *PGM 111*)	223 (ex-*PC 12*)	SIMAC, Peru	1972

Displacement, tons: 130 standard; 147 full load
Dimensions, feet (metres): 101 × 21 × 6 *(30·8 × 6·4 × 1·8)*
Guns: 1—40 mm; 4—20 mm; 2—5 MGs
Main engines: 2 diesels; 2 shafts; 1 800 hp = 18·5 knots
Range, miles: 1 500 at 10 knots
Complement: 15

Rio Sama completed under MAP. Transferred to the Coast Guard Service in 1975. *Rio Chira* built in Peru under MAP.

RIO SAMA *1971, Peruvian Navy*

4 COASTAL PATROL CRAFT

LA PUNTA 230
RIO CHILLÓN 231
RIO SANTA 232
RIO MAJES 233

Of 16 tons with light machine guns. Complement 4.

PHILIPPINES

Ministerial

Minister of National Defence:
Juan Ponce Enrile

Senior Officers

Flag Officer in Command:
Rear-Admiral Ernesto R. Ogbinar
Commander, Naval Defence Forces:
Captain Leonardo G. Bugayong
Commander, Sealift Amphibious Command:
Commodore Genaro M. Frias
Commander, Naval Training Command:
Captain Emilio A. Naraval
Commander, Ready Force:
Captain Alfredo V. Divino
Commander, Fleet Support Command:
Commodore Alfredo C. Protacio

Diplomatic Representation

Armed Forces Attaché London:
Captain Artemio A. Tadiar, Jr (Navy)
Naval Attaché Washington:
Captain Ernesto M. Arzaga

Personnel

1981: Navy—1 605 officers and 13 067 enlisted men

Prefix to Ships' Names

RPS for Republic of Philippines Ship

Marine Corps

Commandant: Brigadier General Rodolfo M. Punsalang
Personnel: 331 officers and 6 507 enlisted men

Coast Guard

Commandant: Commodore Simeon Alejandro
Personnel: 300 officers and 1 700 men

Maritime Air

Three Fokker F-27 maritime patrol aircraft delivered to Air Force in 1981.

Naval Base

Sangley Point

Missiles

Otomat is being fitted in a number of ships and craft.

Strength of the Fleet

Type	*Active*	*Building*
Frigates	8	—
Corvettes	11	—
Fast Attack Craft—Missile	0	3
Large Patrol Craft	15	—
Coastal Patrol Craft	59	—
LSTs	24	—
LSMs	4	—
LSSLs	3	—
Landing Craft	71	—
Repair Ships	3	—
Tankers	2	—
Tugs	6	—
Floating Docks	5	—
Survey Ships	4	—
Miscellaneous	16	—
Coast Guard Craft	?	—

Mercantile Marine

Lloyd's Register of Shipping:
723 vessels of 1 927 869 tons gross

DELETIONS

Frigates

1976 Ex-*Yukutat*, ex-*Cook Inlet* ("Casco" class USCG)

Corvettes

1976 2 "Aggressive" class MSO (to US for disposal 1977) *(Davao del Norte, Davao del Sur)*
1977 *Datu Tupas* (ex-US "Admirable" class)

Light Forces

1976 3 Swift type Mk 1
1977 *Nueva Ecija* (ex-US "PC 461" class)
1979 *Batangas, Capiz*, PCF 308, PCF 317 (4 hydrofoils, non-naval)

Mine Warfare Forces

1979 *Zambales, Zamboanga del Norte*

Amphibious Forces

1978 *Bulacan, Albay, Misamis Oriental*
1979 *Marinduque, Sorsogon, Camarines Norte, Misamis Occidental*

Coast and Geodetic Survey

1976 *Samar*

Tanker

1979 *Lake Mainit*

Tug

1979 *Ifugao*

Auxiliary

1980 *Lake Taal*

FRIGATES

1 Ex-US "SAVAGE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
RAJAH LAKANDULA (ex-*Tran Hung Dao*, ex-USS *Camp*, DER 251)	PF 4	Brown S.B. & Co, Houston	27 Jan 1943	16 Apr 1943	16 Sep 1943

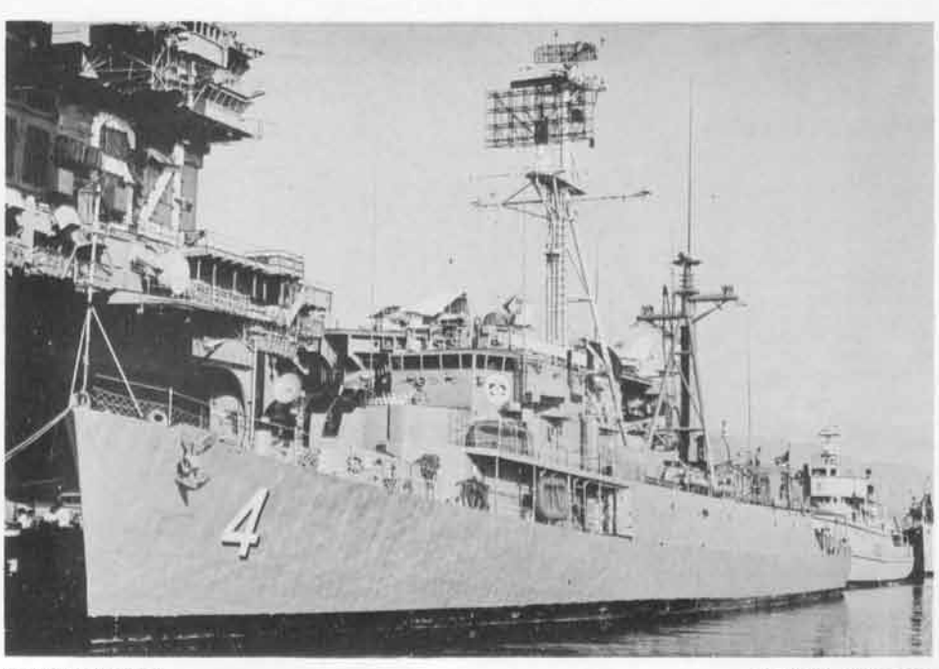
Displacement, tons: 1 590 standard; 1 850 full load
Dimensions, feet (metres): 306 × 36.6 × 14 *(93.3 × 11.2 × 4.3)*
Guns: 2—3 in *(76 mm)*/50 (single Mk 34); 2—20 mm; 5 MGs
A/S weapons: 6 (2 triple) Mk 32 torpedo tubes; 1 trainable Hedgehog (Mk 15); 1—81 mm mortar
Main engines: Diesels (Fairbanks-Morse); 3 400 bhp; 2 shafts
Speed, knots: 20
Complement: Approx 170

Former US Navy destroyer escort, of the FMR design group. After World War II this ship was extensively converted to radar picket configuration to serve as seaward extension of US aircraft attack warning system; redesignated DER with original DE hull number. Subsequently employed during 1960s in Indochina for coastal patrol and interdiction by US Navy (Operation MARKET TIME). Transferred to South Vietnamese Navy 6 February 1971. Acquired by the Philippines in 1975 and formally transferred on 5 April 1976.

Fire control: Mk 63 (fwd) SPG 34 on gun mount. Mk 51 (aft).

Radar: Surface search: SPS 10.
Air search: SPS 28.
Apparently most electronic warfare equipment was removed prior to transfer. (See *Fire control*).

Sonar: SQS 31.



RAJAH LAKANDULA *6/1977, Dr. Giorgio Arra*

4 Ex-US "CASCO" CLASS (COAST GUARD CUTTERS)

Name	No.	Builders	Laid down	Launched	Commissioned
ANDRES BONIFACIO (ex-*Ly Thoung Kiet*, ex-USCGC *Chincoteague*, WHEC 375, ex-*AVP 24*)	PF 7	Lake Washington S.Y.	23 July 1941	15 Apr 1942	12 Apr 1943
GREGORIO DE PILAR (ex-*Ngo Kuyen*, ex-USCGC *McCulloch*, WHEC 386, ex-USS *Wachapreague*, *AGP 8*, *AVP 56*)	PF 8	Lake Washington S.Y.	1 Feb 1943	10 July 1943	17 May 1944
DIEGO SILANG (ex-*Tran Quang Khai*, ex-USCGC *Bering Strait*, WHEC 382, ex-*AVP 34*)	PF 9	Lake Washington S.Y.	7 June 1943	15 Jan 1944	19 July 1944
FRANCISCO DAGOHOY (ex-*Tran Binh Trong*, ex-USCGC *Castle Rock*, WHEC 383, ex-*AVP 35*)	PF 10	Lake Washington S.Y.	12 July 1943	11 Mar 1944	8 Oct 1944

Displacement, tons: 1 766 standard; 2 800 full load
Dimensions, feet (metres): 311·6 × 41·1 × 13·5 *(95 × 12·5 × 4·1)*
Guns: 1—5 in *(127 mm)*/38 (single Mk 30);
3—40 mm (2 single Mk 3, 1 twin Mk 1);
2—20 mm/68 (single); 6 MGs;
2—81 mm mortars
Main engines: Diesels (Fairbanks-Morse); 6 080 bhp; 2 shafts
Speed, knots: 18
Complement: 150

Built as seaplane tenders of the "Barnegat" class for the US Navy.
All transferred to US Coast Guard in 1946-48, initially on loan designated WAVP and then on permanent transfer except ex-*McCulloch* transferred outright from US Navy to Coast Guard; subsequently redesignated as high endurance cutters (WHEC).

Appearance: These ships are distinguished from the former US Navy radar picket frigate of similar size by their pole masts forward, open side passages amidships, and radar antenna on second mast. Note combination 5 calibre machine guns 81 mm mortar forward of bridge in "B" position.

DIEGO SILANG (old number) *1971, Vietnamese Navy*

Aircraft: All are to be fitted with helicopter deck aft but not with support facilities.

Fire control: Mk 52 with Mk 26 radar for 5-in gun.

Radar: Surface search: SPS 53.
Air search: SPA 34.

Transfers: Transferred from US Coast Guard to South Vietnamese Navy in 1971-72. Acquired by the Philippines in 1975 and formally transferred on 5 April 1976. *Francisco Dagohoy* commissioned in Philippines' Navy 23 June 1979.
Ex-USCGC *Yukutat* and *Cook Inlet* transferred for spares 5 April 1976.

3 Ex-US "CANNON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
DATU KALANTIAW (ex-USS *Booth*, DE 170)	PF 76	Norfolk Navy Yard, Portsmouth Va.	30 Jan 1943	21 June 1943	19 Aug 1943
DATU SIRATUNA (ex-*Asahi*, DE 262, ex-USS *Amick*, DE 168)	PF 77	Federal Shipbuilding & Dry Dock Co, Newark, New Jersey	30 Nov 1942	27 May 1943	26 July 1943
RAJAH HUMABON (ex-*Hatsuhi*, DE 263, ex-USS *Atherton*, DE 169)	PF 78	Norfolk Navy Yard, Portsmouth Va.	14 Jan 1943	27 May 1943	29 Aug 1943

Displacement, tons: 1 220 standard; 1 620 full load
Dimensions, feet (metres): 306 × 36·6 × 14 *(93·3 × 11·2 × 4·3)*
Guns: 3—3 in *(76 mm)*/50 (single Mk 22); 6—40 mm (twin); 2—20 mm (single) (6—20 mm in PF 77 and 78)
A/S weapons: 1 Hedgehog; 6 (2 triple) Mk 32 torpedo tubes; DCs (PF 76);
1 Hedgehog; 6 K-guns; 2 DC racks (PF 77 and 78)
Main engines: Diesel-electric drive (General Motors diesels); 3 400 bhp; 2 shafts
Speed, knots: 18
Complement: Approx 165

Fire control: Mk 52 GFCS with Mk 51 rangefinder and Mk 26 radar for 3-in gun; three Mk 51 Mod 2 GFCS for 40 mm.

Radar: Surface search: SPS 5.
Air search: SPS 6C.

Sonar: SQS 17B.

Transfers: PF 76 to Philippines 15 December 1967. Stricken in USN 15 July 1978 and sold 31 August 1978. Ex-Japanese ships *Asahi* and *Hatsuhi* originally transferred 14 June 1955 and were paid off June 1975. Transferred to Philippines 13 September 1976. Towed to South Korea October 1978 for overhaul and modernisation.
Two ex-South Korean ships wrongly listed as operational in 1980-81 edition. Both used as hulks in South Korea.

DATU KALANTIAW *Philippine Navy*

CORVETTES

2 Ex-US "AUK" CLASS

Name	No.	Builders	Commissioned
RIZAL (ex-USS *Murrelet*, MSF 372)	PS 69	Savannah Machine & Foundry Co, Georgia	21 Aug 1945
QUEZON (ex-USS *Vigilance*, MSF 324)	PS 70	Associated Shipbuilders, Seattle, Washington	28 Feb 1944

Displacement, tons: 1 090 standard; 1 250 full load
Dimensions, feet (metres): 221·2 × 32·2 × 10·8 *(67·4 × 9·8 × 3·3)*
Guns: 1—3 in *(76 mm)*/50; 4—40 mm (twin); 4—20 mm (twin)
A/S weapons: 3 (1 triple) Mk 32 torpedo tubes; 1 Hedgehog; depth charges
Main engines: Diesel-electric (General Motors diesels); 2 050 bhp; 2 shafts = 18 knots
Complement: approx 100

Upon transfer the minesweeping gear was removed and a second 3-in gun fitted aft; additional anti-submarine weapons also fitted. *Quezon* has bulwarks on iron-deck to end of superstructure which *Rizal* does not have. Now have helicopter flight deck (but no facilities) in place of after 3-in gun.

Radar: SPS 5C.

Sonar: SQS-HB, TAR-CAN 55, B4-A (8-11kC).

Transfers: PS 69 transferred to the Philippines on 18 June 1965 and PS 70 on 19 August 1967.

QUEZON *1976, Michael D. J. Lennon*

8 Ex-US "PCE 827" CLASS

Name	No.	Builders	Commissioned
MIGUEL MALVAR (ex-*Ngoc Hoi* ex-USS *Brattleboro*, PCER 852)	PS 19	Pullman Standard Car Co, Chicago	26 May 1944
SULTAN KUDARAT (ex-*Dong Da II* ex-USS *Crestview*, PCER 895)	PS 22	Willamette Iron & Steel Corporation, Portland	30 Oct 1943
DATU MARIKUDO (ex-*Van Kiep II* ex-USS *Amherst*, PCER 853)	PS 23	Pullman Standard Car Co, Chicago	16 June 1944
CEBU (ex-USS *PCE 881*)	PS 28	Albina E and M Works, Portland, Oregon	31 July 1944
NEGROS OCCIDENTAL (ex-USS *PCE 884*)	PS 29	Albina E and M Works, Portland, Oregon	30 Mar 1944
LEYTE (ex-USS *PCE 885*)	PS 30	Albina E and M Works, Portland, Oregon	30 Apr 1945
PANGASINAN (ex-USS *PCE 891*)	PS 31	Willamette Iron & Steel Corporation, Portland	15 June 1944
ILOILO (ex-USS *PCE 897*)	PS 32	Willamette Iron & Steel Corporation, Portland	6 Jan 1945

Displacement, tons: 640 standard; 853 full load
Dimensions, feet (metres): 184·5 × 33·1 × 9·5 *(56·3 × 10·1 × 2·9)*
Guns: 1—3 in *(76 mm)*/50; 6—40 mm (single or twin)
A/S weapons: 2 Mk 32 torpedo tubes
Main engines: Diesels (General Motors); 2 000 bhp; 2 shafts = 15 knots
Complement: Approx 90-100

Three originally were fitted as rescue ships (PCER). *Leyte* ran aground in 1979 and may not be salvaged.

Transfers: Five transferred to the Philippines in July 1948 (PS 28-32); PS 22 to South Viet-Nam from US Navy on 29 November 1961, PS 19 on 11 July 1966, and PS 23 in June 1970. PS 19 and 22 to Philippines November 1975 and PS 23 5 April 1976.

LEYTE *10/1977, Dr. Giorgio Arra*

1 Ex-US "ADMIRABLE" CLASS

Name	No.	Builders	Commissioned
MAGAT SALAMAT (ex-*Chi Lang II*, ex-USS *Gayety*, MSF 239)	PS 20	Winslow Marine Railway & S.B. Co, Seattle, Wash	1944

Displacement, tons: 650 standard; 903 full load
Dimensions, feet (metres): 184·5 × 33 × 9·8 *(56·3 × 10·1 × 3)*
Guns: 1—3 in *(76 mm)*/50; 2—40 mm (single); 6—20 mm (1 twin, 4 single)
Main engines: 2 Cooper-Bessemer diesels; 1 710 bhp; 2 shafts = 15 knots
Complement: Approx 80

Launched 19 March 1944. Minesweeping equipment has been removed.

Transfer: *Magat Salamat* transferred to South Viet-Nam by US Navy in April 1962. To Philippines November 1975.

MAGAT SALAMAT (old name and pennant number) *1962, Vietnamese Navy*

LIGHT FORCES

0 + 3 PSMM 5 (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 290
Dimensions, feet (metres): 175·8 × 26·2 × 5·2 *(53·6 × 8 × 1·6)*
Missiles: SSM; 4—Exocet (single cells)
Guns: 1—57 mm/L70; 1—40 mm Bofors; 2 MGs
Main engines: 1 General Electric LM2500 gas turbine; 2 MTU diesels; 2 shafts (cp propellers) = 41 knots (gas); 17 knots (diesels)
Range, miles: 2 000 at 17 knots
Complement: 32

Ordered 1980 from Korea-Tacoma, Masan.

4 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
KATAPANGAN	P 101	Hamelin SY, FDR	9 Feb 1979
BAGONG LAKAS	P 102	Hamelin SY, FDR	9 Feb 1979
—	P 103	Hamelin SY, FDR	1979
—	P 104	Hamelin SY, FDR	1979

Displacement, tons: 132 full load
Dimensions, feet (metres): 100·3 × 18·6 × 5 *(30·6 × 5·7 × 1·5)*
Guns: 2—20 mm; 2 MGs
Main engines: 2 MB820 BB/1 diesels; 2 050 hp; 2 shafts = 16 knots

Reported that further ships of this class may be built locally.

2 Ex-US "PC 461" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
NEGROS ORIENTAL (ex-*É 312*, ex-*L'Inconstant*, *P 636*, ex-USS *PC 1171*)	PS 26	Leathem D. Smith S.B. Co	15 May 1943
NUEVA VISCAYA (ex-USAF *Altus*, ex-USS *PC 568*)	PS 80	Brown S.B. Co	13 July 1942

Displacement, tons: 280 standard; 335 full load
Dimensions, feet (metres): 178·8 × 23·1 × 8·5 *(54·5 × 7 × 2·6)*
Guns: 1—3 in *(76 mm)*/50; several—20 mm (single or twin)
A/S weapons: DCs *(Nueva Viscaya)*
Main engines: Diesels (General Motors); 2 800 bhp; 2 shafts = 20 knots
Complement: Approx 70

Radar: CR 104A.

Sonar: SQS 17B.

Transfers: PS 80 (which had served with USAF 1963-68) transferred in March 1968. PS 26 to France in 1951, Khmer Republic 1956 and, after transferring to Philippines in 1975, bought December 1976.

"PC 461" Class *Philippine Navy*

2 LARGE PATROL CRAFT (SAR)

Name	No.	Builders	Commissioned
BESSANG PASS	SAR 99	Sumidagawa, Japan	1974
TIRAD PASS	SAR 100	Sumidagawa, Japan	1974

Measurement, tons: 75·2 net
Dimensions, feet (metres): 144·3 × 24·3 × — *(44 × 7·4 × —)*
Speed, knots: 25

1 LARGE PATROL CRAFT (SAR)

Name	No.	Builders	Commissioned
BATAAN	SAR 77	Vosper Private Ltd, Singapore	1975

Displacement, tons: 150
Dimensions, feet (metres): 124·3 × 23·6 × 12·5 *(37·9 × 7·2 × 3·8)*
Speed, knots: 30

BATAAN *1975, Vosper Private Ltd*

5 US "PGM-39" and "71" CLASSES (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BASILAN (ex-*PGM 83*, ex-*Hon Troc*)	PG 60	Peterson Builders, Wisconsin	—
AGUSAN (ex-*PGM 39*)	PG 61	Tacoma Boatbuilding Co, Washington	Mar 1960
CATANDUANES (ex-*PGM 40*)	PG 62	Tacoma Boatbuilding Co, Washington	Mar 1960
ROMBLON (ex-*PGM 41*)	PG 63	Tacoma Boatbuilding Co, Washington	June 1960
PALAWAN (ex-*PGM 42*)	PG 64	Tacoma Boatbuilding Co, Washington	June 1960

Displacement, tons: 133 full load
Dimensions, feet (metres): 100·3 × 18·6 × 6·9 *(30·6 × 5·7 × 2·1)*
Guns: 2—20 mm (singles); 2—5 MGs (singles)
Main engines: 2 Mercedes-Benz diesels; 2 050 bhp; 2 shafts = 17 knots *(Basilan* 8 General Motors 6—71 diesels*)*
Complement: Approx 15

Steel-hulled craft built under US military assistance programmes; PG 61-64 for the Philippines, PG 60 for South Viet-Nam. Assigned US PGM-series numbers while under construction. Transferred upon completion. *Basilan* transferred to South Viet-Nam in April 1967 and acquired by the Philippines December 1975.
These craft are lengthened versions of the US Coast Guard 95 ft "Cape" class patrol boat design. PG 62 serves with the Coast Guard.

CATANDUANES *10/1977, Dr. Giorgio Arra*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
TABLAS	PG 85	Tacoma Boatbuilding Co, Washington	1960

31 De HAVILLAND SERIES 9209 (COASTAL PATROL CRAFT)

PC 326-331 **411-435**

Displacement, tons: 15 full load
Dimensions, feet (metres): 45·9 × 14·5 × 3·3 *(14 × 4·4 × 1)*
Guns: 2—5 in MGs; 1—M60 MG
Main engines: 2 Cummins diesels; 740 hp = 25 knots
Range, miles: 500 at 12 knots
Complement: 8

GRP hulls. First six built by De Havilland Marine, Sydney NSW. Completed between 20 November 1974 and 8 February 1975. In August 1975 80 further craft of this design were ordered from Marcelo Yard, Manila to be delivered 1976-78 at the rate of two per month. By the end of 1976, 25 more had been completed but a serious fire in the shipyard destroyed 14 new hulls and halted production.

De HAVILLAND CPC *1977, De Havilland*

13 IMPROVED SWIFT TYPE (COASTAL PATROL CRAFT)

PCF 318	**PCF 323**	**PCF 337**
PCF 319	**PCF 333**	**PCF 338**
PCF 320	**PCF 334**	**PCF 339**
PCF 321	**PCF 336**	**PCF 340**
PCF 322		

Displacement, tons: 33 full load
Dimensions, feet (metres): 65 × 16 × 3·4 *(19·8 × 4·9 × 1)*
Guns: 2—5 MGs (twin); 2—3 MGs (single)
Main engines: 3 General Motors diesels; 1 590 bhp; 3 shafts = 25 knots
Complement: 8

Improved Swift type inshore patrol boats built by Sewart for the Philippine Navy. First six delivered January-June 1972, 333 and 334 in April 1975, 337 and 338 in July 1975, 336 in November 1975 and 339 and 340 in December 1976.

13 SWIFT (Mk 1 and 2) TYPE (COASTAL PATROL CRAFT)

PCF 300	**PCF 309**	**PCF 313**
PCF 301	**PCF 310**	**PCF 314**
PCF 303	**PCF 311**	**PCF 315**
PCF 306	**PCF 312**	**PCF 316**
PCF 307		

Displacement, tons: 22·5 full load
Dimensions, feet (metres): 50 × 13·6 × 4 *(15·2 × 4·1 × 1·2)* (Mk 1 300-303) 51·3 ft *(15·6)* (Mk 2 306-317)
Guns: 2—5 MGs (twin)
Main engines: 2 General Motors geared diesels; 860 bhp; 2 shafts = 28 knots

Most built in the USA. PCF 303 served in US Navy prior to transfer to the Philippines; others built for US military assistance programmes. PCF 300 and 301 transferred to Philippines in March 1966, PCF 303 in August 1966, PCF 306-313 in February 1968, PCF 314-316 in July 1970. PCF 317 built in 1970 in the Philippines (ferro concrete) with enlarged superstructure used as yacht for Señora Marcos.

SWIFT Type *10/1977, Dr. Giorgio Arra*

2 COASTAL PATROL CRAFT

Name	*No.*
ABRA	FB 83
BUKIDNON	FB 84

Displacement, tons: 72 full load
Dimensions, feet (metres): 87 × 9 × 5 *(26·5 × 2·7 × 1·5)*
Guns: 2—20 mm (single); 1—5 MG
Main engines: Mercedes-Benz/MTU diesels; 2 400 bhp; 2 shafts = 15 knots
Complement: 16 (3 officers, 13 men)

Abra built Singapore. Completed 8 January 1970. *Bukidnon* completed Cavite 1969. Wood hulls and aluminium superstructure.

AMPHIBIOUS FORCES

4 Ex-US "LSM 1" CLASS

Name	*No.*	*Commissioned*
ISABELA (ex-USS *LSM 463*)	LP 41	1 Mar 1945
BATANES (ex-*Huong Giang*, ex-USS *Oceanside*, LSM 175)	LP 65	25 Sep 1944
WESTERN SAMAR (ex-*Hat Giang*, ex-*LSM 9011*, ex-USS *LSM 355*)	LP 66	9 Dec 1944
ORIENTAL MINDORO (ex-USS *LSM 320*)	LP 68	19 Aug 1944

Displacement, tons: 743 beaching; 1 115 full load
Dimensions, feet (metres): 203·5 × 34·5 × 7·5 *(62 × 10·5 × 2·3)*
Guns: 1—40 mm (single); 4—20 mm (singles)
Main engines: 2 General Motors diesels; 2 880 bhp; 2 shafts = 12·9 knots
Complement: Approx 70

LP 41 transferred to the Philippines in March 1961 and LP 68 in April 1962; LP 66 originally transferred from US Navy to French Navy for use in Indochina in January 1954; subsequently transferred to South Viet-Nam in December 1955; LP 65 transferred from US Navy to South Viet-Nam on 1 August 1961. Acquired by the Philippines 17 November 1975.
LP 66 was fitted as hospital ship (LSM-H) for treating casualties retaining her armament. Has deck houses in and above well-deck.
LSM 110 (ex-South Viet-Nam) transferred 17 November 1975 for spares and scrap.

WESTERN SAMAR (old pennant number) *Vietnamese Navy*

24 Ex-US "1-511" and "512-1152" CLASSES (LSTs)

Name	*No.*	*Commissioned*
AGUSAN DEL SUR (ex-USS *Jerome County*, LST 848)	LT 54	1945
ZAMBOANGA DEL SUR (ex-*Cam Ranh*, ex-USS *Marion County*, LST 975)	LT 86	3 Feb 1945
COTOBATO DEL SUR (ex-USS *Cayuga County*, LST 529)	LT 87	1942
MINDORO OCCIDENTAL (ex-USNS *T-LST 222*)	LT 93	10 Sep 1943
SURIGAO DEL NORTE (ex-USNS *T-LST 488*)	LT 94	24 May 1943
SURIGAO DEL SUR (ex-USNS *T-LST 546*)	LT 95	27 Mar 1944
MAQUINDANAO (ex-USS *Caddo Parish*, LST 515)	LT 96	28 Jan 1944
CAGAYAN (ex-USS *Hickman County*, LST 825)	LT 97	8 Dec 1944
ILOCOS NORTE (ex-USS *Madera County*, LST 905)	LT 98	20 Jan 1945
TARLAC (ex-USNS *T-LST 47*)	LT 500	8 Nov 1943
LAGUNA (ex-USNS *T-LST 230*)	LT 501	3 Nov 1943
SAMAR ORIENTAL (ex-USNS *T-LST 287*)	LT 502	15 Dec 1943
LANAO DEL SUR (ex-USNS *T-LST 491*)	LT 503	3 Dec 1943
LANAO DEL NORTE (ex-USNS *T-LST 566*)	LT 504	29 May 1944
LEYTE DEL SUR (ex-USNS *T-LST 607*)	LT 505	24 Apr 1944
DAVAO ORIENTAL (ex-USNS *Daggett County*, T-LST 689)	LT 506	2 May 1944
BENGUET (ex-USNS *Davies County*, T-LST 692)	LT 507	10 May 1944
SIERRA MADRE (ex-*Dumagat*, ex-*My Tho*, ex-USS *Harnett County*, *AGP 821*, *ex-LST 821*)	AL 57	14 Jan 1944
AURORA (ex-USNS *Harris County*, T-LST 822)	LT 508	23 Nov 1944
CAVITE (ex-USNS *Hillsdale County*, LST 835)	LT 509	20 Nov 1944
SAMAR DEL NORTE (ex-USNS *Nansemond County*, T-LST 1064)	LT 510	12 Mar 1945
COTABATO DEL NORTE (ex-USNS *Orleans Parish*, T-LST 1069, ex-*MCS 6*, *LST 1069*)	LT 511	31 Mar 1945
TAWI-TAWI (ex-USNS *T-LST 1072*)	LT 512	12 Apr 1945
APAYAO (ex-*Can Tho*, ex-USS *Garrett County*, AGP 786, ex-LST 786)	—	1945

Displacement, tons: 1 620 standard; 2 472 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 6—40 mm (2 twin, 2 single)
Main engines: General Motors diesels; 1 800 bhp; 2 shafts = 10 knots
Complement: Varies; approx 60 to 110 (depending upon employment)

Cargo capacity 2 100 tons. Many of these ships served as cargo ships in the Western Pacific under the US Military Sealift Command (USNS/T-LST); they were civilian manned by Korean and Japanese crews.
Zamboanga del Sur and some of the later ships have tripod masts; others have pole masts. The USNS ships lack troop accommodation and other amphibious warfare features. Many of these ships are used for general cargo work in Philippine service.

Transfers: LT 96-98 on 29 November 1969; LT 93-95 on 15 July 1972; LT 506, 509, 510 were transferred to Japan in April 1961 and thence to Philippines in 1975—remainder transferred from US Navy in 1976 with exception of *Sierra Madre* and *Apayao* which were used as light craft repair ships in South Viet-Nam and have retained amphibious capability (transferred to Viet-Nam 1970 and to Philippines 1976 acquired by purchase 13 September 1977). *Cotobato del Sur* and *Zamboanga del Sur* transferred (grant aid) 17 November 1975. *Samar del Norte* acquired by purchase 24 September 1977. Several have undergone major refit including replacement of frames and plating as well as engines and electrics, while some previously listed without names have not been incorporated in the fleet.
LT 501, 504, 508 and 512 commissioned in Philippine Navy 8 August 1978 and LT 500, 502, 503, 505, 507 and 511 on 18 October 1978. *Apayao* transferred 17 November 1975, *Agusan del Sur* transferred April 1975.

LEYTE DEL SUR (tripod mast)

3 Ex-US "LSSL 1" CLASS

Name	*No.*	*Commissioned*
CAMARINES SUR (ex-*Nguyen Duc Bong*, ex-US *LSSL 129*)	LF 48	31 Dec 1944
SULU (ex-US *LSSL 96*)	LF 49	23 Jan 1945
LA UNION (ex-*Doan Ngoc Tang*, ex-US *LSSL 9*)	LF 50	1944

Displacement, tons: 227 standard; 443 full load
Dimensions, feet (metres): 153 × 23·7 × 5·7 *(46·6 × 7·2 × 1·7)*
Guns: 1—3 in; 4—40 mm; 4—20 mm; 4 MGs
Main engines: 2 General Motors diesels; 900 bhp; 2 shafts = 6 knots
Complement: 60

Former US Navy landing ships support; designed to provide close-in-fire support for amphibious assaults, but suitable for general gunfire missions.
La Union was transferred to France in 1951 *(Hallebarde* L 9023) transferred to Japan 1956-64; returned and transferred to South Viet-Nam in 1965. Acquired by Philippines 1975 as was ex-*Lulu Phu Tho* (ex-US *LSSL 101*) (for spares). LF 48 and 49 transferred 17 November 1975. Ex-US *LSSL 68* and *87* transferred September and November 1975 from Japan and subsequently used for spares. Ex-US *LSIL 699, 871, 872, 875* and one other purchased 17 November 1975 for spares and scrapping.

CAMARINES SUR (old pennant number) *Vietnamese Navy*

11 Ex-US "LCM 8" CLASS

TKM 90-1, TKM 90-2, LCM 257, 258, 260-266

TKM 90-1 and 90-2 transferred March 1972. LCM 257 and 258 transferred June 1973, remainder June 1975.

50 Ex-US "LCM 6" CLASS

LCM 224-227, 229, 231-234, 237, 239, 240, 249, 255, 256, 259 + 34

One transferred in 1955, 13 in 1971-73, 24 in November 1975, remaining 12 1973-75.

7 Ex-US "LCVP" CLASS

LCVP 175, 181 + 5

Two transferred in 1955-56, one in 1965, two in 1971 and 175 and 181 in June 1973.

3 Ex-US "LCU" CLASS

Ex US-LCU 1603, 1604, 1606

Transferred from Japan November 17 1975. Refitted in Japan.

SERVICE FORCES

3 Ex-US "ACHELOUS" CLASS (REPAIR SHIPS)

Name	*No.*	*Commissioned*
KAMAGONG (ex-*Aklan*, ex-USS *Romulus*, ARL 22, ex-*LST 926*)	AR 67	9 Dec 1944
NARRA (ex-USS *Krishna*, ARL 38, ex-*LST 1149*)	AR 88	3 Dec 1945
YAKAL (ex-USS *Satyr*, ARL 23, ex-*LST 852*)	AR 517	20 Nov 1944

Displacement, tons: 4 342 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 4—40 mm (1 quad); 10—20 mm (twins)
Main engines: General Motors diesels; 1 800 bhp; 2 shafts = 11·6 knots
Complement: Approx 220

Converted during construction. Extensive machine shop, spare parts stowage, supplies, etc.

Transfers: AR 67 transferred to the Philippines in November 1961, AR 88 on 30 October 1971 and AR 517 on 24 January 1977. (Originally to South Viet-Nam 30 September 1971.)

KAMAGONG *1968, Philippine Navy*

MISCELLANEOUS

1 PRESIDENTIAL YACHT

Name	*No.*	*Builders*	*Commissioned*
ANG PANGULO (ex-*The President*, ex-*Roxas*, ex-*Lapu-Lapu*)	TP 777	Ishikawajima, Japan	1959

Displacement, tons: 2 727 full load
Dimensions, feet (metres): 257·6 × 42·6 × 21 *(78·5 × 13 × 6·4)*
Guns: 2—20 mm
Main engines: Diesels; 5 000 bhp; 2 shafts = 18 knots
Complement: Approx 90

Built as war reparation; launched in 1958. Used as presidential yacht and command ship. Originally named *Lapu-Lapu* after the chief who killed Magellan; renamed *Roxas* on 9 October 1962 after the late Manuel Roxas, the first President of the Philippines Republic, renamed *The President* in 1967 and *Ang Pangulo* in 1975.

ANG PANGULO *11/1976, Dr. Giorgio Arra*

1 Ex-US "ADMIRABLE" CLASS (PRESIDENTIAL YACHT)

Name	*No*	*Builders*	*Commissioned*
MOUNT SAMAT (ex-*Pagasa*, ex-*Santa Maria*, ex-*Pagasa*, ex-*APD 21*, ex-USS *Quest*, *AM 281*)	TP 21	Gulf Shipbuilding Corporation	25 Oct 1944

Displacement, tons: 650 standard; 762 full load
Dimensions, feet (metres): 184·5 × 33 × 9·8 *(56·3 × 10·1 × 3)*
Main engines: Cooper Bessemer diesels; 1 710 bhp; 2 shafts = 15 knots
Complement: Approx 60

Former US Navy minesweeper (AM). Commissioned on 25 October 1944. Transferred to the Philippines in July 1948. Used as presidential yacht and command ship.

MOUNT SAMAT *10/1977, Dr. Giorgio Arra*

1 YACHT

Name	*No.*	*Builders*	*Commissioned*
ANG PINUNO	TP 77	Vosper Private Ltd, Singapore	Dec 1975

Length, feet (metres): 124·3 *(37·9)*
Main engines: 2 diesels; 7 500 hp = 28·5 knots

Used as a command ship.

ANG PINUNO *1979*

1 Ex-US YON TYPE (FUEL BARGE)

— (Ex-US YON 279)

Transferred December 1975.

3 Ex-US YW TYPE (WATER CARRIERS)

LAKE LANAO (ex-US *YW 125*) YW 42
LAKE BULUAN (ex-US *YW 111*) YW 33
LAKE PAOAY (ex-US *YW 130*) YW 34

Displacement, tons: 1 237 full load
Dimensions, feet (metres): 174 × 32·7 × 13·2 *(53 × 10 × 4)*
Guns: 2—20 mm
Main engine: General Motors diesel; 640 bhp; 1 shaft = 7·5 knots
Complement: 29

Basically similar to YOG type but adapted to carry fresh water. Cargo capacity 200 000 gallons. *Lake Lanao* transferred to the Philippines in July 1948; others on 16 July 1975—*YW 103* for spare parts and scrap.

2 Ex-US YO/YOG TYPE (TANKERS)

Name	*No*	*Commissioned*
LAKE NAUJAN (ex-US *YO 173*)	YO 43	1943
LAKE BUHI (ex-US *YOG 73*)	YO 78	1944

Displacement, tons: 520 standard; 1 400 full load
Dimensions, feet (metres): 174 × 32·7 × 13·2 *(53 × 10 × 4)*
Guns: 2—20 mm (singles)
Main engine: Union diesel; 640 bhp; 1 shaft = 8 knots
Complement: 28

Former US Navy harbour oiler (YO) and gasoline tankers (YOG). Cargo capacity 6 570 barrels. YO 43 carries fuel oil and the YO 78 gasoline and diesel oil.

Deletions: Two craft from South Viet-Nam ex-*YOG 33* and ex-*YOG 80* accepted for scrapping and spare parts 17 November 1975.

Transfers: YO 43 transferred to the Philippines in July 1948, YO 78 in July 1967 on loan and by purchase 5 March 1980. Ex-*YO 155* and *YOG 61* transferred from US Navy to the Philippines on 16 July 1975 for spare parts and scrap.

LAKE NAUJAN *10/1977, Dr. Giorgio Arra*

1 Ex-US C1-M-AV1 TYPE (SUPPORT SHIP)

Name	*No.*	*Builders*	*Commissioned*
MACTAN (ex-USCGC *Kukui*, WAK 186, ex-USS *Colquitt*, AK 174)	TK 90	Froemming Brothers, Milwaukee	22 Sep 1945

Displacement, tons: 2 420 light; 7 400 full load
Dimensions, feet (metres): 338·5 × 50 × 18 *(103·2 × 15·2 × 5·5)*
Guns: 2—5 MGs
Main engine: Nordberg diesel; 1 700 bhp; 1 shaft = 11·5 knots
Complement: 106

Commissioned in US Navy on 22 September 1945; transferred to the US Coast Guard two days later. Subsequently served as Coast Guard supply ship in Pacific until transferred to Philippines on 1 March 1972 and by purchase 1 August 1980. Used to supply military posts and lighthouses in the Philippine archipelago.

1 LIGHTHOUSE TENDER

PEARL BANK (ex-US Army *LO 4*, ex-Australian *MSL*)

Displacement, tons: 160 standard; 300 full load
Dimensions, feet (metres): 120 × 24·5 × 8 *(36·6 × 7·5 × 2·4)*
Main engines: Fairbanks-Morse diesels; 240 bhp; 2 shafts = 7 knots

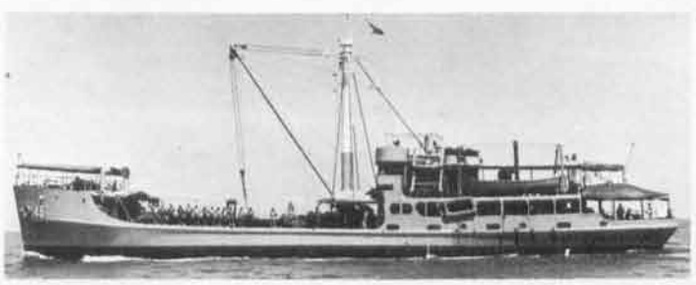
Originally an Australian motor stores lighter; subsequently transferred to the US Army and then to the Philippines. Employed as a lighthouse tender.

5 Ex-US ARMY FS TYPE (BUOY TENDERS)

Name	*No.*
LAUIS LEDGE (ex-US Army *FS 185*)	TK 45
BOJEADOR (ex-US Army *FS 203*)	TK 46
LIMASAWA (ex-USCGC *Nettle WAK 129*, ex-US Army *FS 169*)	TK 79
BADJAO (ex-Japanese, ex-US Army *FS 524*)	AS 59
MANGYAN (ex-Japanese, ex-US Army *FS 408*)	AS 71

Displacement, tons: 470 standard; 811 full load
Dimensions, feet (metres): 180 × 32 × 10 *(54·9 × 9·8 × 3)*
Guns: 5 and 3 MGs *(Limasawa)*
Main engines: General Motors diesels; 800 shp; = 10 knots (12 *Limasawa*)

Former US Army freight and supply ships. Employed as tenders for buoys and lighthouses. Ex-*FS 408* transferred 24 September 1976 by sale. *Limasawa* acquired by sale 31 August 1978.



LAUIS LEDGE *1969, Philippine Navy*

1 Ex-US ARMY TUG

TIBOLI (ex-US Army *LT 1976*) YQ 58

Transferred March 1976.

5 Ex-US "YTL 422" CLASS (TUGS)

IGOROT (ex-*YTL 572*) YQ 222
TAGBANUA (ex-*YTL 429*) YQ 223
— (ex-*YTL 750*) —
ILONGOT (ex-*YTL 427*) YQ 225
TASADAY (ex-*YTL 425*) YQ 226

Former US Navy 66 ft harbour tugs.

Ex-*YTL 750* transferred from Japan—24 September 1976 by sale. *YTL 748* was to be transferred but sank on passage. YQ 225 and 226 acquired by sale 1 August 1980.

5 FLOATING DOCKS

YD 200 (ex-*AFDL 24*)
YD 201 (ex-*AFDL 3681*)
YD 203 (ex-*AFDL 3682*)
YD 204 (ex-*AFDL 20*)
YD 205 (ex-*ADFL 44*)

Floating dry docks built in the USA; three are former US Navy units with YD 200 transferred in July 1948, YD 204 in October 1961 (sale 1 August 1980) and YD 205 in September 1969; two other units built specifically for Philippine service were completed in May 1952 and August 1955, respectively.

2 FLOATING CRANES

YU 206 (ex-US *YD 163*)
YU 207 (ex-US *YD 191*)

YU 207 purchased 1 August 1980.

SURVEY SHIPS

(Operated by Coast and Geodetic Survey of Ministry of National Defence)

Name	*No.*	*Builders*	*Commissioned*
PATHFINDER	—	—	1909

Displacement, tons: 1 057
Guns: 2—20 mm
Complement: 69

Ex-US Coast Guard vessel. Date of transfer unknown.

Name	*No.*	*Builders*	*Commissioned*
ALUNYA	—	Walkers, Maryborough, Australia	1964
ARINYA	—	Walkers, Maryborough, Australia	1962

Displacement, tons: 245 full load
Dimensions, feet (metres): 90 pp × 22 × 10·5 *(27·4 × 6·7 × 3·2)*
Main engines: 2 diesels; 336 bhp = 10 knots
Complement: 33 (6 officers, 27 ratings)

Coaster type with raised quarter-deck.

1 SURVEY SHIP

Name	*No.*	*Builders*	*Commissioned*
ATYIMBA	—	Walkers, Maryborough, Australia	1969

Displacement, tons: 611 standard; 686 full load
Dimensions, feet (metres): 161 × 33 × 12 *(49·1 × 10 × 3·7)*
Guns: 2—20 mm
Main engines: 2 Paxman diesels; 1 452 bhp = 11 knots
Range, miles: 5 000 at 8 knots
Complement: 54

Similar to HMAS *Flinders* with differences in displacement and use of davits aft instead of cranes.

ATYIMBA *1976, Dr. Giorgio Arra*

COAST GUARD

The Coast Guard operates a number of Coastal Patrol Craft numbered from 90 upwards plus PG 62. Of these the majority are of US construction although several come from foreign builders.

1 Ex-US COAST GUARD "BALSAM" CLASS (TENDER)

Name	*No.*	*Builders*	*Commissioned*
KALINGA (ex-USCGC *Redbud, WAGL 398,* ex-USNS *Redbud, T-AKL 398*)	AG 89	Marine Iron & Shipbuilding Co, Duluth	11 Sep 1943

Displacement, tons: 935 standard; 1 025 full load
Dimensions, feet (metres): 180 × 37 × 13 *(54·8 × 11·3 × 4)*
Guns: 2—5 MGs (single)
Main engines: Diesel-electric; 1 400 bhp; 1 shaft = 12 knots

Originally US Coast Guard buoy tender (WAGL 398). Transferred to US Navy on 25 March 1949 as AG 398; redesignated AKL 398 on 31 March 1949; transferred to Military Sea Transportation Service on 20 February 1952 (T-AKL 398); reacquired by Coast Guard on 20 November 1970; transferred to Philippines 17 May 1972.

KALINGA *10/1977, Dr. Giorgio Arra*

POLAND

Ministerial

Minister of Defence:
General Wojciech Jaruzelski (Prime Minister)

Headquarters' Appointments

Commander-in-Chief of the Polish Navy:
Admiral Ludwik Janczyszyn

Chief of the Naval Staff:
Rear-Admiral Henryk Pietraszkiewicz

Diplomatic Representation

Naval, Military and Air Attaché in London:
Colonel Aleksander Majchrzak
Naval, Military and Air Attaché in Moscow:
Major General Ignacy Szczęsnowicz
Naval, Military and Air Attaché in Paris:
Lieutenant-Colonel Henryk Dunal
Naval, Military and Air Attaché in Washington:
Colonel Henryk Krzeszowski

Personnel

(a) 1981: 25 000 (2 800 officers and 22 200 men)
(b) 3 years' national service

Bases

Gdynia, Hel, Swinoujscie.

Naval Aviation

There is a Fleet Air Arm of about 50 fixed-wing aircraft (mainly MiG-17 and IL-28) and helicopters.

Prefix to Ships' Names

ORP, standing for *Okret Polskiej Rzeczpospolitej*

Strength of the Fleet

Including WOP (Coast Guard)

Type	*Active*
Submarines—Patrol	4
Destroyer	1
Fast Attack Craft—Missile	13
Fast Attack Craft—Torpedo	10
Large Patrol Craft	23
Coastal Patrol Craft	42
Minesweepers—Ocean	24
Minesweeping Boats	25
LSMs	23
Landing Craft	19
Surveying Vessel	1
AGIs	3
Training Ships	8
Salvage Ships and Craft	6
Tankers	7
TRVs	2
Tugs	18
DGVs	3
Diving Craft	9
Miscellaneous	15

Mercantile Marine

Lloyd's Register of Shipping:
842 vessels of 3 639 078 tons gross

DELETIONS

Destroyers

1974 *Blyskawica* (museum ship in Gdynia in place of *Burza*)
1975 *Grom* and *Wicher* (ex-"Skory" class) now immobile AA batteries at Gdynia

Corvettes

1974 *Grozny, Nieugiety* ("Kronshtadt" class)

Fast Attack Craft—Torpedo

1973 3 "P 6" class
1974 6 "P 6" class
1975 4 "P 6" class
1979 3 "P 6" class (last three now target craft);
2 "Oksywie" class

Miscellaneous

1980 *Iskra*

SUBMARINES

4 Ex-SOVIET "WHISKEY" CLASS

ORZEL 292 **KONDOR** 294
SOKOL 293 **BIELIK** 295

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·6 × 21·3 × 16·1
(76 × 6·5 × 4·9)
Torpedo tubes: 4—21 in *(533 mm)*, (bow)
2—16 in *(406 mm)* (stern); 14 torpedoes carried
Mines: 28 mines in lieu of torpedoes
Main machinery: Diesel-electric; 2 diesels; 4 000 hp; 2 shafts;
Electric motors; 2 700 hp
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots (surfaced)
Complement: 54

Built in the USSR and transferred to the Polish Navy.

Radar: Snoop Plate.

Sonar: Tamir.

KONDOR *1972*

DESTROYER

1 Ex-SOVIET "SAM KOTLIN" CLASS

WARSZAWA (ex-*Spravedlivy*) 275

Displacement, tons: 2 850 standard; 3 600 full load
Dimensions, feet (metres): 418·2 × 42·3 × 15·1
(127·5 × 12·9 × 4·6)
Missiles: SAM: SA-N-1 (twin launcher with 20 missiles)
Guns: 2—5·1 in *(130 mm)* (1 twin); 4—45 mm (quad);
8—30 mm (twin)
A/S weapons: 2—16-barrelled MBU 6000
Torpedo tubes: 5—21 in *(533 mm)* (quin)
Main engines: Geared turbines; 2 shafts; 72 000 shp
Boilers: 4
Speed, knots: 36
Oil fuel, tons: 800
Range, miles: 4 000 at 16 knots
Complement: 300

Transferred from the USSR to the Polish Navy in 1970.

Radar: Air search: Head Net A.
Fire control: Peel Group (SA-N-1);
Wasp Head/Sun Visor B (main armament); Hawk Screech.
IFF: High Pole B.

WARSZAWA *5/1975, C. and S. Taylor*

LIGHT FORCES

13 Ex-SOVIET "OSA I" CLASS (FAST ATTACK CRAFT—MISSILE)

421-433

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (2 twin, 1 forward, 1 aft)
Main engines: 3 M503A diesels; 12 000 bhp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Pennant numbers are carried on side-boards on the bridge.

Radar: Search: Square Tie.
Fire control: Drum Tilt.

"OSA I" Class (old number) *1969*

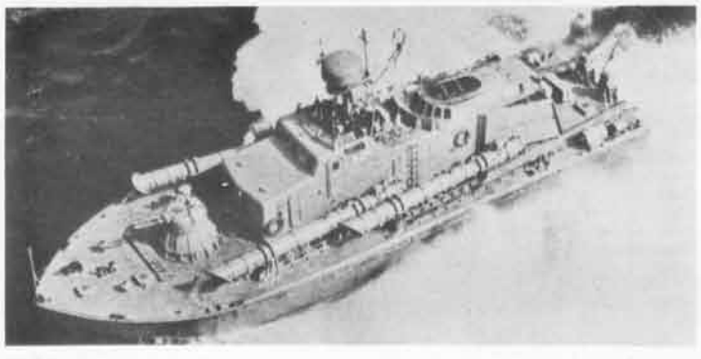
10 "WISLA" CLASS (FAST ATTACK CRAFT—TORPEDO)

451-459, 466

Displacement, tons: 70 full load
Dimensions, feet (metres): 82 × 18 × 6 *(25 × 5·5 × 1·8)*
Guns: 2—30 mm (twin)
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 4 diesels; 4 shafts; 4 800 hp = 34 knots

Polish built in a continuing programme since early 1970s.

Radar: Search: Pot Head.
IFF: High Pole A.



"WISLA" Class *1975, S. Breyer*

5 "OBLUZE" CLASS (LARGE PATROL CRAFT)

Note: All Polish-built Large Patrol Craft based on German R-boat design with modified superstructure and deck-houses.

Name	*No.*	*Builders*	*Commissioned*
—	321	Oksywie Shipyard	1965
—	322	Oksywie Shipyard	1965
—	323	Oksywie Shipyard	1965
—	324	Oksywie Shipyard	1966
—	325	Oksywie Shipyard	1966

Displacement, tons: 170
Dimensions, feet (metres): 143 × 19 × 7 *(43·6 × 6 × 2·1)*
Guns: 4—30 mm (2 twins)
A/S weapons: 2 internal DC racks
Main engines: 2 diesels = 20 knots

Belong to WOP (Coast Guard).

Radar: Search: Tamirio RN 231.

"OBLUZE" Class *1974*

8 "MODIFIED OBLUZE" CLASS (LARGE PATROL CRAFT)

351, 354, 355, 357, 358
WYTRWALY 352, **ZAWZIETY** 353, **ZRECZNY** 356

Displacement, tons: 150
Dimensions, feet (metres): 137·8 × 19 × 6·6 *(42 × 5·8 × 2)*
Guns: 4—30 mm
A/S weapons: 2 internal DC racks
Main engines: 2 diesels = 20 knots

Slightly smaller than original "Obluze" class. Built late 1960s.

Radar: Search: Tamirio RN 231.
Fire control: Drum Tilt.

"MODIFIED OBLUZE" Class *1972, S. Breyer*

1 "OKSYWIE" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 170 standard
Dimensions, feet (metres): 134·5 × 19 × 6·9 *(41 × 5·8 × 2·1)*
Guns: 2—37 mm; 4—12·7 mm
A/S weapons: 2 DC racks
Main engines: Diesels; speed = 20 knots

Serves with WOP (Coast Guard). Built 1964.

Sonar: Tamirio.

"OKSYWIE" Class *1972*

9 "GDANSK" CLASS (LARGE PATROL CRAFT)

311-319

Displacement, tons: 120
Dimensions, feet (metres): 124·7 × 19·2 × 5 *(38 × 5·9 × 1·5)*
Guns: 2—37 mm; 2—12·7 mm (twin)
A/S weapons: DC rails
Main engines: Diesels = 20 knots

Built in Poland in 1960. Belong to WOP (Coast Guard).

Sonar: Tamirio.

"GDANSK" Class *1970*

9 "PILICA" CLASS (COASTAL PATROL CRAFT)

161-169

Displacement, tons: 100 (approx)
Guns: 2—25 mm (twin)
Torpedo tubes: 2—21 in *(533 mm) (see note)*
Main engines: 2 diesels = 15 knots

Built in Poland since 1973. Belong to WOP (Coast Guard). Last four fitted with two torpedo tubes. Masts vary.

"PILICA" Class *1979*

12 "WISLOKA" CLASS (COASTAL PATROL CRAFT)

A 72 ft class operated by WOP (Coast Guard). Some armed with one or two machine guns aft.

"WISLOKA" Class *1979, S. Breyer*

21 "K 8" CLASS (COASTAL PATROL CRAFT)

Details as in Mine Warfare Forces.

MINE WARFARE FORCES

12 "KROGULEC" CLASS (MINESWEEPERS—OCEAN)

Name	*No.*	*Builders*	*Commissioned*
ORLIK	613	Stocznia, Gdynia	1964
KROGULEC	614	Stocznia, Gdynia	1963
JASTRAB	615	Stocznia, Gdynia	1964
KORMORAN	616	Stocznia, Gdynia	1963
CZAJKA	617	Stocznia, Gdynia	1964
ALBATROS	618	Stocznia, Gdynia	1965
PELIKAN	619	Stocznia, Gdynia	1965
TUKAN	620	Stocznia, Gdynia	1966
KANIA	621	Stocznia, Gdynia	1966
JASKOLKA	622	Stocznia, Gdynia	1966
ZURAW	623	Stocznia, Gdynia	1967
CZALPA	624	Stocznia, Gdynia	1967

Displacement, tons: 500
Dimensions, feet (metres): 190·3 × 24·6 × 8·2 *(58 × 7·5 × 2·5)*
Guns: 6—25 mm (twins)
Main engines: Diesels = 16 knots

PELIKAN *5/1975, C. and S. Taylor*

12 SOVIET "T 43" CLASS (MINESWEEPERS—OCEAN)

Name	*No.*	*Builders*	*Commissioned*
ZUBR*	601	Stocznia, Gdynia	1957
TUR*	602	Stocznia, Gdynia	1957
LOS*	603	Stocznia, Gdynia	1957
DZIK*	604	Stocznia, Gdynia	1958
BIZON	605	Stocznia, Gdynia	1958
BOBR	606	Stocznia, Gdynia	1959
ROZMAK	607	Stocznia, Gdynia	1959
DELFIN	608	Stocznia, Gdynia	1960
FOKA	609	Stocznia, Gdynia	1960
MORS	610	Stocznia, Gdynia	1961
RYS	611	Stocznia, Gdynia	1961
ZBIK	612	Stocznia, Gdynia	1962

* 58 metre class.

Displacement, tons: 500 standard; 580 full load (*); 600 (remainder)
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1) (*)* 196·8 *(60)* (remainder)
Guns: 4—37 mm (twins); 2—25 mm (twin); 4—14·5 mm (twins)
A/S weapons: 2 DCTs
Mines: Can lay 20
Main engines: 2 diesels, 2 shafts; 2 200 hp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Tur fitted as a radar picket with minesweeping gear removed.

DELFIN *1969, Polish Navy*

25 "K 8" CLASS (MINESWEEPING BOATS)

831-842, 943-955

Displacement, tons: 20 standard; 26 full load
Dimensions, feet (metres): 55·4 × 10·5 × 3·9 *(16·9 × 3·2 × 1·2)*
Guns: 2—14·5 mm (twin); 2 MGs (twin)
Mines: Can lay mines
Main engines: 2 diesels; 2 shafts; 700 hp = 18 knots
Complement: 6

Built in Poland—four in 1955, three in 1956, thirteen in 1959, five in 1960.

AMPHIBIOUS FORCES

23 "POLNOCHNIY" CLASS (LSMs)

BALAS	**JANOW** 807	**STUDZIANKI** 802
BRDA 804	**LENIN** 811	**WARTA**
GRUNWALD	**NARWIK**	= 15

Displacement, tons: 700 standard; 1 150 full load
Dimensions, feet (metres): 269 × 32·8 × 5·8 *(82 × 10 × 1·8)*
Guns: 4—30 mm (twin); 2—18-barrelled 140 mm rocket launchers
Main engines: 2 diesels; 5 000 bhp = 20 knots
Complement: 40

Polish built in Gdansk, but same as the Soviet "Polnochniy" class—can carry six tanks. Of various types including Polish variations. Data given for "Polnochniy" (Type C). Pennant numbers—801-811 and 888-899.

Radar: Fire control: Drum Tilt.
Navigation: Don 2.
IFF: Square Head and High Pole.

"POLNOCHNIY" Class *1978*

4 "MARABUT" CLASS (LCMs)

872-5

Displacement, tons: 60
Dimensions, feet (metres): 72·2 × 11·5 × 3·3 *(22 × 3·5 × 1)*
Gun: 1—14·5 mm (in turret)
Speed, knots: 15

Introduced 1975. Pennant numbers changed. Load—one tank or platoon of fully equipped men. Appear to have laminated plastic hull with aluminium superstructure.

"MARABUT" Class *8/1975*

15 "EICHSTADEN" CLASS (LCPs)

501-515

Dimensions, feet (metres): 53·1 × 11·5 × 3·3 *(16·2 × 3·5 × 1)*
Speed, knots: 15

Introduced in mid-1970s. Load—20 fully equipped men.

"EICHSTADEN" Class *1976*

INTELLIGENCE VESSELS

1 "B 10" TYPE

BALTYK 264

Displacement, tons: 1 200
Measurements, tons: 658 gross; 450 deadweight
Dimensions, feet (metres): 194·3 × 29·5 × 14 *(59·2 × 9 × 4·3)*
Main engines: Steam; 1 000 hp = 11 knots

Trawler of "B 10" type. Built in 1954 in Gdansk. Converted and structure altered.

BALTYK *9/1978, G. Koop*

NAVIGATOR 262 **HYDROGAF** 263

Details as for *Kopernik*. Commissioned June 1975.
Much altered in the upperworks and unrecognisable as "Momas".

NAVIGATOR *9/1977, G. Koop*

SURVEYING VESSEL

1 "MOMA" CLASS

KOPERNIK

Displacement, tons: 1 200 standard; 1 700 full load
Dimensions, feet (metres): 219·8 × 34·4 × 13·1 *(67 × 10·5 × 4)*
Main engines: 2 Skoda diesels; 3 000 hp; 2 shafts = 15 knots
Range, miles: 3 000 at 12 knots

TRAINING SHIPS

1 SAIL TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
DAR MOLODIEZY	—	Gdansk	1979

Three masted sailing ship with accommodation for 150 cadets.

1 "HANSA" CLASS

BK 5 (ex-*Gryf*, ex-*Zetempowiec*, ex-*Opplem*, ex-*Omsk*, ex-*Empire Contees*, ex-*Irene Oldendorf*)

Apart from holding the record in this book for name changes this 1 959 ton ship launched in 1944, is now an alongside accommodation ship for cadets.

2 "WODNIK" CLASS

WODNIK 251 **GRYF** 252

Displacement, tons: 1 800
Dimensions, feet (metres): 239·4 × 39·4 × 16·4 *(73 × 12 × 5)*
Guns: 4—30 mm (twin); 2—25 mm (twin)
Main engines: Diesels = 17 knots

Built at Gdynia. *Wodnik* launched November 1975, *Gryf* March 1976. Sisters to East German *Wilhelm Pieck* and two Soviet ships.

"WODNIK" Class *9/1976, MOD*

4 "BRYZA" CLASS (TRAINING SHIPS)

BRYZA 710 **PODCHORAZY** 711 **KADET** 712 **ELEW** 713

Displacement, tons: 150
Dimensions, feet (metres): 98·4 × 22·9 × 6·4 *(30 × 7 × 2)*
Main engines: Diesels = 10 knots
Complement: 11 plus 26 cadets

Podchorazy commissioned 30 November 1974, *Elew* 5 March 1975 and *Kadet* July 1975.

ELEW *6/1977*

TANKERS

1 "KRAB" CLASS

Z 1

3 "MOSKIT" CLASS

Z 3 Z 8 Z 9

Displacement, tons: Approx 700
Guns: 2—30 mm (twin)

Z 3 *1974*

3 "TYPE 5"

Z 5 Z 6 Z 7

Lighters of 300 tons gross with diesels, converted into tankers for coastal service.

Z 7 *1974*

TORPEDO RECOVERY VESSELS

2 "PAJAK" CLASS

K 8 K 11

TUGS

5 "SCHLEPPER" CLASS

H 1, 3, 4, 8, 11

8 "GOLIAT" CLASS

H 2, 5, 13-18

2 "BG 7" CLASS

H 6-7

3 "MOTYL" CLASS

H 12, 19, 20

Polish built 1962-63.

"MOTYL" Class *1973*

DEGAUSSING VESSELS

3 "MROWKA" CLASS

SD 11, 12, 13

Dimensions, feet (metres): 200 × 30 × 12 *(61 × 9·1 × 3·6)*

A class of DGVs. First completed in 1972. Unarmed.

"MROWKA" Class *1978*

SALVAGE SHIPS

Note: There are also four 180 ton salvage craft.

Name	*No.*	*Builders*	*Commissioned*
PIAST	281	Stocznia, Gdansk	26 Jan 1974
LECH	282	Stocznia, Gdansk	30 Nov 1974

Displacement, tons: 1 200 standard; 1 700 full load
Dimensions, feet (metres): 219·8 × 34·4 × 13·1 *(67 × 10·5 × 4)*
Guns: 8—25 mm (twins)
Main engines: 2 Skoda diesels; 3 000 shp; 2 shafts = 15 knots
Range, miles: 3 000 at 12 knots

Carry a diving bell. Basically a "Moma" class hull.

"PIAST" Class *1977*

DIVING CRAFT

3 "KULIK" CLASS

R 21-23

MFV type.

6 "R 34" CLASS

R 32-37

Lifeboat silhouette.

AUXILIARIES

3 Ex-SOVIET "P 6" CLASS (FAST TARGET CRAFT)

KS 1-3

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Main engines: 4 diesels; 4 800 bhp; 4 shafts = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Acquired from the USSR in 1957-58. Converted to target craft with reflectors similar to East German variant.

Ex-AGI *Kompas* now used as a barrack ship.
Hydrograf and *Kontroller,* of 30 and 80 tons are civilian-operated survey craft.
Icebreaker *Perkun* of 800 tons is civilian-operated but available for naval use.
Some 15 others are tenders.

PORTUGAL

Headquarters' Appointment

Chief of Naval Staff:
Admiral E. Sousa Leitão

Diplomatic Representation

Naval Attaché in Bonn:
Captain Rogério F. Tavares Simoës
Defence Attaché in Brasilia:
Colonel (PAF) João M. C. Viegas Polina
Naval Attaché in London:
Captain J. T. F. De Sousa Campos
Naval Attaché in Paris:
Captain Antonio L. Estacio dos Reis
Naval Attaché in Washington:
Captain Jose M. Niny dos Santos

Personnel

(a) 1981: 14 000 including 2 000 marines
(b) 2 years' national service

Naval Bases

Main Base: Lisbon—Alfeite
Dockyard: Arsenal do Alfeite

Maritime Reconnaissance Aircraft

Whilst there are no aircraft belonging to the Navy, P2V aircraft of the Portuguese Air Force are placed under naval operational control for specific maritime operations. Hercules and helicopters are also used for reconnaissance and SAR.

Prefix to Ships' Names

NRP

Strength of the Fleet

Type	*Active*	*Building*
Submarines (Patrol)	3	—
Frigates	17	—
Large Patrol Craft	10	—
Coastal Patrol Craft	17	—
Minesweepers (Coastal)	4	—
LCTs	2	—
LCMs	11	—
LCA	1	—
Survey Ships and Craft	4	1
Replenishment Tanker	1	—
Sail Training Ship	1	—
Ocean Tugs	4	—
Harbour Tugs	2	—
Harbour Tanker	1	—

Mercantile Marine

Lloyd's Register of Shipping:
350 vessels of 1 355 989 tons gross

DELETIONS

(see Angola and Mozambique sections)

Submarine

1975 *Cachalote* ("Daphne" class) to Pakistan

Frigate

1975 *Pero Escobar*

Amphibious Forces

1975 *Alfange* (to Angola), *Ariete* (to Mozambique), *Cimitarra* ("Alfange" class LCTs)
LDM 401-411, 413-417 ("400" class LCMs)
LDM 304, 309 ("300" class LCMs)
LDM 204 ("200" class LCM)
LDM 101, 102, 105-118 ("100" class LCMs)
LDP 301-303, 201, 203-217, 107, 108 (21 LCAs)
1976 *Montanee, Bacamarte* ("Alfange" class)
1978 LDM 419

Large Patrol Craft

1975 *Boavista, Brava, Santa Luzia* ("Maio" class)
1976 *Sao Nicolau*

Light Forces

1975 *Cassiopeia, Escorpião, Lira, Orion, Pegaso* ("Argos" class)
Sabre (river patrol craft)
Albufeira, Aljezur, Alvor ("Alvor" class)
Aldebaran, Altair, Arcturus, Bellatrix, Espiga, Fomalhaut, Pollux, Procion, Rigel, Sirius and *Vega* ("Bellatrix" class, two to Mozambique, five to Angola)
Jupiter, Marte, Mercurio, Saturno, Urano and *Venus* ("Jupiter" class, three to Mozambique, two to Angola)
Antares (Coastal Patrol Craft) to Mozambique
Azevia, Corvina, Dourada ("Azevia" class)
1976 *Argos, Centauro, Dragao, Hidra, Sagitario* ("Argos" class to Angola)
Castor, Regulus, Bicuda ("Azevia" class)

Survey Ships

1975 *Almirante Lacerda* (to Mozambique), *Cavalho Araujo, Cruzeiro do Sul*
1976 *Pedro Nunes*

Service Forces

1975 *Sam Bras* (Fleet Supply Ship) now used as accommodation ship, *Santo André*
1976 *São Rafael*

Minesweepers

1975 *Lajes, Santa Cruz* (MSCs)
1976 *Horta, Velas, Vila do Porto*

PENNANT LIST

Submarines

S 163	Albacora
S 164	Barracuda
S 166	Delfin

Frigates

F 471	Antonio Enes
F 472	Almirante Pereira Da Silva
F 473	Almirante Gago Coutinho
F 474	Almirante Magalhaes Correa
F 475	João Coutinho
F 476	Jacinto Candido
F 477	Gen. Pereira d'Eca
F 480	Comandante João Belo
F 481	Comandante Hermenegildo Capelo
F 482	Comandante Roberto Ivens
F 483	Comandante Sacadura Cabral
F 484	Augusto de Castilho
F 485	Honorio Barreto
F 486	Baptiste de Andrade
F 487	João Roby
F 488	Afonso Cerqueira
F 489	Oliveira E. Carmo

Light Forces

P 370	Rio Minho
P 1140	Cacine
P 1141	Cunene
P 1142	Mandovi
P 1143	Rovuma
P 1144	Cuanza
P 1145	Geba
P 1146	Zaire
P 1147	Zambeze
P 1148	Dom Aleixo
P 1149	Dom Jeremias
P 1160	Limpopo
P 1161	Save
P 1162	Albatroz
P 1163	Acor
P 1164	Andorinha
P 1165	Aguia
P 1166	Condor
P 1167	Cisne

Mine Warfare Forces

M 401	Sao Roque
M 402	Ribeira Grande
M 403	Lagoa
M 404	Rosario

Amphibious Forces

LDG 201	Bombarda
LDG 202	Alabarda
LDM 119-121	
LDM 406	
LDM 414	
LDM 418 and 420-424	
LDP 216	

Service Forces

A 520	Sagres
A 521	Schultz Xavier
A 526	Afonso de Albuquerque
A 527	Almeida Carvalho
A 5200	Mira
A 5206	São Gabriel

"COMANDANTE JOÃO BELO" Class

"ALMIRANTE PEREIRA DA SILVA" Class

"JOAO COUTINHO" Class

AFONSO DE ALBUQUERQUE

SUBMARINES

3 FRENCH "DAPHNE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ALBACORA	S 163	Dubigeon-Normandie	6 Sep 1965	13 Oct 1966	1 Oct 1967
BARRACUDA	S 164	Dubigeon-Normandie	19 Oct 1965	24 Apr 1967	4 May 1968
DELFIN	S 166	Dubigeon-Normandie	14 May 1967	23 Sep 1968	1 Oct 1969

Displacement, tons: 700 standard; 869 surfaced; 1 043 dived
Dimensions, feet (metres): 189·6 × 22·3 × 15·1
(57·8 × 6·8 × 4·6)
Torpedo tubes: 12—21·7 in *(550 mm)*; (8 bow, 4 stern)
Main machinery: SEMT-Pielstick diesels, 1 300 bhp; electric motors, 450 kW, 1 600 hp; 2 shafts
Speed, knots: 13·2 surfaced; 16 dived
Oil fuel, tons: 90
Range, miles: 2 710 at 12·5 knots surfaced; 2 130 at 10 knots snorting
Complement: 50 (5 officers, 45 men)

The prefabricated construction of these submarines was begun between 1 October 1964 and 6 September 1965 at the Dubigeon-Normandie Shipyard. They are basically similar to the French "Daphne" type, but slightly modified to suit Portuguese requirements.

Transfer: *Cachalote* transferred to Pakistan as *Ghazi* 1975.

ALBACORA *10/1979, Michael D. J. Lennon*

FRIGATES

Note: Plans to replace the "Almirante Pereira da Silva" class are now centred on the building of a Portuguese version of the "Standard" frigate, similar to but less sophisticated than the Netherlands "Kortenaer" class. These would be built in Portugal with Netherlands' assistance. The financial side of this deal is still under discussion. In view of Portugal's economic situation grants would be required and one suggestion is that these should come from the Netherlands in return for continued use of the Azores base. At the same time some financial aid could come from the sale of the four ships of the "Baptista de Andrade" class which have been on the sales list for some time.

4 "COMANDANTE JOÃO BELO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
COMANDANTE JOÃO BELO	F 480	At et Ch de Nantes	6 Sep 1965	22 Mar 1966	1 July 1967
COMANDANTE HERMENEGILDO CAPELO	F 481	At et Ch de Nantes	13 May 1966	29 Nov 1966	26 Apr 1968
COMANDANTE ROBERTO IVENS	F 482	At et Ch de Nantes	13 Dec 1966	8 Aug 1967	23 Nov 1968
COMANDANTE SACADURA CABRAL	F 483	At et Ch de Nantes	18 Aug 1967	15 Mar 1968	25 July 1969

Displacement, tons: 1 750 standard; 2 250 full load
Dimensions, feet (metres): 340·3 × 38·4 × 15·7
(103·7 × 11·7 × 4·8)
Guns: 3—3·9 in *(100 mm)*/55 (single Mod 1953); 2—40 mm/70
A/S weapon: 1—12 in *(305 mm)* quad mortar
Torpedo tubes: 6—21 in *(533 mm)* A/S (triple)
Main engines: 4 SEMT-Pielstick diesels; 2 shafts; 16 000 bhp
Speed, knots: 25
Range, miles: 7 500 at 15 knots
Complement: 200 (14 officers, 186 men)

Construction: The prefabricated construction of these frigates was begun on 1 October 1964.

Conversion: Programme in hand for modernisation including provision of helicopter.

Design: They are generally similar to the French "Commandant Rivière" class except for the 30 mm guns which were replaced by 40 mm guns. Designed for tropical service.

Radar: Search: DRBV 22A.
Tactical: DRBV 50.
Fire control: DRBC 31D.
Navigation: Decca RM 316.

COMANDANTE ROBERTO IVENS *1979, Michael D. J. Lennon*

Sonar: Search: SQS 17A.
Attack: DUBA-3A.

3 "ALMIRANTE PEREIRA DA SILVA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ALMIRANTE PEREIRA DA SILVA	F 472 (ex-US *DE 1039*)	Estaleiros Navais (Lisnave), Lisbon	14 June 1962	2 Dec 1963	20 Dec 1966
ALMIRANTE GAGO COUTINHO	F 473 (ex-US *DE 1042*)	Estaleiros Navais (Lisnave), Lisbon	2 Dec 1963	13 Aug 1965	29 Nov 1967
ALMIRANTE MAGALHÃES CORREA	F 474 (ex-US *DE 1046*)	Estaleiros Navais de Viana do Castelo	30 Aug 1965	26 Apr 1966	4 Nov 1968

Displacement, tons: 1 450 standard; 1 914 full load
Dimensions, feet (metres): 314·6 × 36·7 × 17·5
(95·9 × 11·2 × 5·3)
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 2 Bofors 4-barrelled 375 mm rocket launchers; 6 (2 triple) Mk 32 A/S torpedo tubes
Main engines: De Laval dr geared turbines; 1 shaft; 20 000 shp
Boilers: 2 Foster-Wheeler, 300 psi, 850°F
Speed, knots: 27
Oil fuel, tons: 400
Range, miles: 3 220 at 15 knots
Complement: 166 (12 officers, 154 men)

After over ten years service there are certain maintenance problems with this class. A Life Extension Programme for all three is planned although replacement would be preferred.

Construction: The prefabrication of *Almirante Pereira da Silva* and *Almirante Gago Coutinho* was begun in 1961 at Lisnave (formerly Navais Shipyard, Lisbon) and of *Almirante Magalhães Correa* in 1962.

Design: Similar to the US destroyer escorts of the "Dealey" class (since deleted), but modified to suit Portuguese requirements.

Radar: Search: MLA-1b.
Fire control: SPG 34 (on 3-in mounts).
Navigational: Decca RM 316P.
Tactical: Type 978.
Extensive EW.

ALMIRANTE MAGALHÃES CORREA *7/1980, Michael D. J. Lennon*

Sonar: Search: SQS 30-32A. SQA 10A (VDS).
Attack: DUBA-3A.

4 "BAPTISTA DE ANDRADE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BAPTISTE DE ANDRADE	F 486	Empresa Nacional Bazán, Spain	1972	Mar 1973	19 Nov 1974
JOAO ROBY	F 487	Empresa Nacional Bazán, Spain	1972	3 June 1973	18 Mar 1975
AFONSO CERQUEIRA	F 488	Empresa Nacional Bazán, Spain	1973	6 Oct 1973	26 June 1975
OLIVEIRA E. CARMO	F 489	Empresa Nacional Bazán, Spain	1972	Feb 1974	Feb 1975

Displacement, tons: 1 250 standard; 1 380 full load
Dimensions, feet (metres): 277·5 × 33·8 × 11·8 *(84·6 × 10·3 × 3·6)*
Guns: 1—3·9 in *(100 mm)*/55 (single Mod. 1968); 2—40 mm /70 Bofors (single L70)
A/S weapons: 2 triple Mk 32 torpedo tubes
Main engines: 2 OEW 12-cyl Pielstick diesels; 11 000 bhp = 23·5 knots
Range, miles: 5 900 at 18 knots
Complement: 107, plus marine detachment

All four of this class were to be sold to Colombia in 1977. However this transfer did not take place but they remain available for sale.

Missiles: Space and weight allowance reserved for two MM38 Exocet.

Radar: Air search: Plessey AWS 2.
Navigation: Decca TM 626.
Fire control: Thomson SCF Pollux.

OLIVEIRA E. CARMO *1978, Portuguese Navy*

Sonar: Diodon.

6 "JOÃO COUTINHO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ANTONIO ENES	F 471	Empresa Nacional Bazán, Spain	Apr 1968	16 Aug 1969	18 June 1971
JOÃO COUTINHO	F 475	Blohm and Voss AG, Hamburg, West Germany	Sep 1968	2 May 1969	7 Mar 1970
JACINTO CANDIDO	F 476	Blohm and Voss AG, Hamburg, West Germany	Apr 1968	16 June 1969	16 June 1970
GENERAL PEREIRA D'EÇA	F 477	Blohm and Voss AG, Hamburg, West Germany	Oct 1968	26 July 1969	10 Oct 1970
AUGUSTO DE CASTILHO	F 484	Empresa Nacional Bazán, Spain	Aug 1968	4 July 1969	14 Nov 1970
HONORIO BARRETO	F 485	Empresa Nacional Bazán, Spain	July 1968	11 Apr 1970	15 Apr 1971

Displacement, tons: 1 203 standard; 1 380 full load
Dimensions, feet (metres): 277·5 × 33·8 × 11·8 *(84·6 × 10·3 × 3·6)*
Guns: 2—3 in *(76 mm)*/50 (twin Mk 34); 2—40 mm/70
A/S weapons: 1 Hedgehog; 2 DC throwers; 2 DC racks
Main engines: 2 OEW 12-cyl Pielstick diesels; 10 560 bhp
Speed, knots: 24·4
Range, miles: 5 900 at 18 knots
Complement: 100 (9 officers, 91 men) plus marine detachment of 34

Fire control: Mk 51 GFCS—40 mm.

Modernisation: A programme for this class is planned.

Radar: Air search: MLA-1B.
Navigation: Decca TM 626.
Main guns: On-mounted radar SPG 34 (Mk 63 GFCS).

JACINTO CANDIDO *1978, Portuguese Navy*

LIGHT FORCES

10 "CACINE" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
CACINE	P 1140	Arsenal do Alfeite	1969
CUNENE	P 1141	Arsenal do Alfeite	1969
MANDOVI	P 1142	Arsenal do Alfeite	1969
ROVUMA	P 1143	Arsenal do Alfeite	1969
CUANZA	P 1144	Estaleiros Navais do Mendogo	May 1969
GEBA	P 1145	Estaleiros Navais do Mendogo	May 1969
ZAIRE	P 1146	Estaleiros Navais do Mendogo	Nov 1970
ZAMBEZE	P 1147	Estaleiros Navais do Mendogo	1971
LIMPOPO	P 1160	Arsenal do Alfeite	Apr 1973
SAVE	P 1161	Arsenal do Alfeite	May 1973

Displacement, tons: 292·5 standard; 310 full load
Dimensions, feet (metres): 144 × 25·2 × 7·1 *(44 × 7·7 × 2·2)*
Guns: 2—40 mm; 1—32-barrelled rocket launcher 37 mm
Main engines: 2 MTU 12V 538 Maybach (MTU) diesels; 4 000 bhp = 20 knots
Range, miles: 4 400 at 12 knots
Complement: 33 (3 officers, 30 men)

Radar: KH 975.

CUANZA *1979, Michael D. J. Lennon*

2 "DOM ALEIXO" CLASS (COASTAL PATROL CRAFT)

Name	No.	Builders	Commissioned
DOM ALEIXO	P 1148	S. Jacintho Aveiro	7 Dec 1967
DOM JEREMIAS	P 1149	S. Jacintho Aveiro	22 Dec 1967

Displacement, tons: 62·6 standard; 67·7 full load
Dimensions, feet (metres): 82·1 × 17 × 5·2 *(25 × 5·2 × 1·6)*
Gun: 1—20 mm
Main engines: 2 Cummins diesels; 1 270 bhp = 16 knots
Complement: 10 (2 officers, 8 men)

Dom Jeremias in use as survey craft.

Radar: Decca 303.

DOM JEREMIAS *1973, Portuguese Navy*

14 "ALBATROZ" CLASS (COASTAL PATROL CRAFT)

Name	No.	Builders	Commissioned
ALBATROZ	P 1162	Arsenal do Alfeite	1974
AÇOR	P 1163	Arsenal do Alfeite	1974
ANDORINHA	P 1164	Arsenal do Alfeite	1975
AGUIA	P 1165	Arsenal do Alfeite	1975
CONDOR	P 1166	Arsenal do Alfeite	1974
CISNE	P 1167	Arsenal do Alfeite	1974
+ 8			

Displacement, tons: 45
Dimensions, feet (metres): 77·4 × 18·4 × 5·2 *(23·6 × 5·6 × 1·6)*
Guns: 1—20 mm; 2—5 MGs
Main engines: 2 Cummins diesels; 1 100 hp
Speed, knots: 20
Range, miles: 2 500 at 12 knots
Complement: 8 (1 officer, 7 men)

An increasing class of which eight more than those listed above have been reported.

Radar: Decca RM 316P.

ANDORINHA *1978, Portuguese Navy*

1 COASTAL PATROL CRAFT

Name	No.	Builders	Commissioned
RIO MINHO	P 370	Arsenal do Alfeite	1957

Displacement, tons: 14
Dimensions, feet (metres): 49·2 × 10·5 × 2·3 *(15 × 3·2 × 0·7)*
Guns: 2 light MGs
Main engines: 2 Alfa Romeo diesels; 130 bhp = 9 knots
Complement: 7

Built for the River Minho on the Spanish border. Based at Caminha.

RIO MINHO *1978, Portuguese Navy*

MINE WARFARE FORCES

4 "SÃO ROQUE" CLASS (MINESWEEPERS—COASTAL)

Name	No.	Builders	Commissioned
SÃO ROQUE	M 401	CUF Shipyard, Lisbon	6 June 1956
RIBEIRA GRANDE	M 402	CUF Shipyard, Lisbon	8 Feb 1957
LAGOA	M 403	CUF Shipyard, Lisbon	10 Aug 1956
ROSARIO	M 404	CUF Shipyard, Lisbon	8 Feb 1956

Displacement, tons: 394·4 standard; 451·9 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·3 × 8·5 × 2·5)*
Guns: 2—20 mm (twin)
Main engines: 2 Mirrlees diesels; 2 shafts; 2 500 bhp = 15 knots
Complement: 47 (4 officers, 43 men)

Similar to British "Ton" class coastal minesweepers, laid down on 7 September 1954, under the OSP-MAP. *Lagoa* and *São Roque* were financed by USA and other two by Portugal.
40 mm gun removed 1972.

RIBEIRA GRANDE *1979, Michael D. J. Lennon*

AMPHIBIOUS FORCES

2 "BOMBARDA" CLASS LDG (LCTs)

Name	No.	Builders	Commissioned
BOMBARDA	LDG 201	Estaleiros Navais do Mondego	1969
ALABARDA	LDG 202	Estaleiros Navais do Mondego	1970

Displacement, tons: 510 standard; 652 full load
Dimensions, feet (metres): 184·3 × 38·7 × 6·2 *(56·2 × 11·8 × 1·9)*
Main engines: 2 Maybach-Mercedes-Benz (MTU) diesels; 910 hp = 9·5 knots
Range, miles: 2 600 at 9·5 knots
Complement: 20 (2 officers, 18 men)

Radar: Decca RM 316.

BOMBARDA *1978, Portuguese Navy*

8 "LDM 400" CLASS (LCMs)

LDM 406 **LDM 418** **LDM 421** **LDM 423**
LDM 414 **LDM 420** **LDM 422** **LDM 424**

Displacement, tons: 48 full load
Dimensions, feet (metres): 58·3 × 15·8 × 3·3 *(17·3 × 4·8 × 1)*
Main engines: 2 Cummins diesels; 400 hp = 10 knots

3 "LDM 100" CLASS (LCMs)

LDM 119 **LDM 120** **LDM 121**

Displacement, tons: 50 full load
Length, feet (metres): 50 *(15·25)*
Main engines: 2 diesels; 450 bhp

All built at the Estaleiros Navais do Mondego in 1965.

1 "LDP 200" (Ex-LD) CLASS (LCA)

Name	No.	Builders	Commissioned
—	LDP 216	Estaleiros Navais do Mondego	5 Feb 1969

Displacement, tons: 12 light; 18 full load
Length, feet (metres): 46 *(14)*
Main engines: 2 diesels; 187 bhp

SURVEY SHIPS

1 NEW CONSTRUCTION OCEANOGRAPHIC SHIP

Displacement, tons: 1 140
Dimensions, feet (metres): 196·8 × 39·4 × 15·1 *(60 × 12 × 4·6)*
Main engines: Diesels; 1 700 hp = 15 knots

Ordered 1976 from Arsenal do Alfeite.

1 Ex-BRITISH "BAY" CLASS

Name	No.	Builders	Commissioned
AFONSO DE ALBUQUERQUE (ex-HMS *Dalrymple*, ex-HMS *Luce Bay*)	A 526	Wm. Pickersgill & Sons Ltd, Sunderland and completed by HM Dockyard, Devonport	10 Feb 1949

Displacement, tons: 1 590 standard; 2 230 full load
Dimensions, feet (metres): 307 × 38·5 × 12·5 *(93·7 × 11·7 × 3·8)*
Main engines: 4-cyl triple expansion; 2 shafts; 5 500 ihp
Boilers: 2 Admiralty 3-drum type
Speed, knots: 18
Range, miles: 7 055 at 9·1 knots
Complement: 109 (9 officers, 100 men)

Modified "Bay" class frigate. Laid down on 29 April 1944. Launched on 12 April 1945. Purchased from the UK in April 1966.

AFONSO DE ALBUQUERQUE *1978, Portuguese Navy*

1 Ex-US "KELLAR" CLASS

Name	*No.*	*Builders*	*Commissioned*
ALMEIDA CARVALHO (ex-USNS *Kellar, T-AGS 25*)	A 527	Marietta Shipbuilding Co	31 Jan 1969

Displacement, tons: 1 200 standard; 1 400 full load
Dimensions, feet (metres): 190 × 39 × 15 *(58 × 11·9 × 4·5)*
Main engine: Diesel-electric; 1 shaft; 1 200 hp = 15 knots
Complement: 30 (5 officers, 25 men)

Laid down on 20 November 1962, launched on 30 July 1964. On loan from the US Navy since 21 January 1972.

Radar: One RCA CRM-N2A-30; one Decca TM 829.

DOM JEREMIAS

See *Light Forces* section for details.

MIRA (ex-*Fomalhaut*, ex-*Arrabida*) A 5200

Displacement, tons: 30 standard
Dimensions, feet (metres): 62·9 × 15·2 × 4 *(19·2 × 4·6 × 1·2)*
Main engines: 3 Perkins diesels; 300 bhp = 15 knots
Range, miles: 650 at 8 knots (economical speed)
Complement: 6

Launched 1961. No radar.

SERVICE FORCES

1 REPLENISHMENT TANKER

Name	*No.*	*Builders*	*Commissioned*
SÃO GABRIEL	A 5206	Estaleiros de Viana do Castelo	27 Mar 1963

Displacement, tons: 14 200 full load
Measurement, tons: 9 854 gross; 9 000 deadweight
Dimensions, feet (metres): 479 × 59·8 × 26·2 *(146 × 18·2 × 8)*
Main engine: 1 Parnetrada-geared turbine; 1 shaft; 9 500 shp = 17 knots
Boilers: 2
Range, miles: 6 000 at 15 knots
Complement: 98 (10 officers, 88 men)

Radar: Search: SPS 6C.
Navigation: KH 975.

SÃO GABRIEL *1978, Portuguese Navy*

1 HARBOUR TANKER

BC 3 (ex-US *YO 194*)

Transferred April 1962.

1 TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
SAGRES (ex-*Guanabara*, ex-*Albert Leo Schlageter*)	A 520	Blohm & Voss, Hamburg	1 Feb 1938

Displacement, tons: 1 725 standard; 1 784 full load
Dimensions, feet (metres): 231 wl; 295·2 oa × 39·1 × 17 *(70·4; 90 × 11·9 × 5·2)*
Main engines: 2 MAN auxiliary diesels; 1 shaft; 700 bhp = 10·5 knots
Oil fuel, tons: 52
Range, miles: 5 450 at 7·5 knots (diesel)
Complement: 153 (10 officers, 143 men)

Former German sail training ship. Built by Blohm & Voss, Hamburg. Launched in June 1937 and completed on 1 February 1938. Sister of US Coast Guard training ship *Eagle* (ex-German *Horst Wessel*) and Soviet *Tovarisch*. Taken by the USA as a reparation after the Second World War in 1945 and sold to Brazil in 1948. Purchased from Brazil and commissioned in the Portuguese Navy on 2 February 1972 at Rio de Janeiro and renamed *Sagres*.
Sail area 20 793 sq ft. Height of main-mast 142 ft.

SAGRES *1973, Portuguese Navy*

TUGS

1 OCEAN TUG

Name	*No.*	*Builders*	*Commissioned*
SCHULTZ XAVIER	A 521	Alfeite Naval Yard	14 July 1972

Displacement, tons: 900
Main engines: 2 diesels; 2 shafts; 2 400 hp = 14·5 knots
Range, miles: 3 000 at 12·5 knots

A dual purpose ocean tug and buoy/lighthouse tender ordered late in 1968.

SCHULTZ XAVIER *1978, Portuguese Navy*

3 OCEAN TUGS

SPARTACUS **ULISSES** +1

Displacement, tons: 194
Dimensions, feet (metres): 94 × 28 × 7 *(28·7 × 8·5 × 2·1)*
Main engines: 2 400 hp; 2 shafts = 12·5 knots

First launched 18 February 1977, second on 9 March 1977.

2 HARBOUR TUGS

RB 1 (ex-*ST 1994*) **RB 2** (ex-*ST 1996*)

Transferred from the US Navy—RB 1 December 1961, RB 2 March 1962.

QATAR

Now possesses an expanding Marine Police Division of the Qatar Police Force. The geographical position of the state, dividing the Persian Gulf and covering Bahrain, gives this force added importance. The main oil-terminal is at Umm-Said.

Senior Officer

Commander Naval Force:
Colonel Salah Eddin Azab Saleem

Personnel

(a) 1981: 400 officers and men
(b) Voluntary service

Base

Doha

Mercantile Marine

Lloyd's Register of Shipping:
36 vessels of 91 934 tons gross

LIGHT FORCES

3 FAST ATTACK CRAFT (MISSILE)

Ordered in France in 1980. To carry Exocet.

6 VOSPER THORNYCROFT TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BARZAN	Q 11	Vosper Thornycroft Ltd	13 Jan 1975
HWAR	Q 12	Vosper Thornycroft Ltd	30 Apr 1975
THAT ASSUARI	Q 13	Vosper Thornycroft Ltd	3 Oct 1975
AL WUSAAIL	Q 14	Vosper Thornycroft Ltd	28 Oct 1975
FATEH-AL-KHAIR	Q 15	Vosper Thornycroft Ltd	22 Jan 1976
TARIQ	Q 16	Vosper Thornycroft Ltd	1 Mar 1976

Displacement, tons: 120
Dimensions, feet (metres): 110 × 21 × 5·5 *(33·5 × 6·4 × 1·6)*
Guns: 2—20 mm
Main engines: 2 Paxman 16-cyl Valenta diesels; 6 250 hp = 27 knots
Complement: 25

Ordered in 1972-73. All laid down between September 1973 and November 1974.

AL WUSAAIL *12/1974, C. and S. Taylor*

2 COASTAL PATROL CRAFT

Length, feet (metres): 75 *(22·5)*
Guns: 2—20 mm
Main engines: 2 diesels; 1 420 hp

Built by Whittingham and Mitchell, Chertsey 1969.

2 KEITH NELSON TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 13
Dimensions, feet (metres): 44 × 12·3 × 3·8 *(13·5 × 3·8 × 1·1)*
Guns: 1—12·7 mm; 2—7·62 mm (singles)
Main engines: 2 Caterpillar diesels; 800 hp = 26 knots
Complement: 6

The third vessel of this group has been converted into a pilot cutter.

7 WATERCRAFT P 1200 TYPE (COASTAL PATROL CRAFT)

Displacement, tonnes: 12·7
Dimensions, feet (metres): 39 × 13·4 × 3·6 *(11·9 × 4·1 × 1·1)*
Guns: 2—MGs
Main engines: 2 Wizeman Mercedes WM400 diesels; 660 hp; 2 shafts = 29 knots
Complement: 4

Built by Watercraft, Shoreham, England in 1980.

25 FAIREY MARINE "SPEAR" CLASS (COASTAL PATROL CRAFT)

71-95

Displacement, tons: 4·3
Dimensions, feet (metres): 29·8 × 9 × 2·8 *(9·1 × 2·8 × 0·9)*
Guns: 3—7·62 mm
Main engines: 2 diesels; 290 hp; 2 shafts = 26 knots
Complement: 4

First seven ordered early 1974. Delivered 19 June 1974, 16 September 1974, 18 September 1974, 2 November 1974, December 1974, January 1975, February 1975. Contract for further five signed December 1975. Third contract for three fulfilled with delivery of two on 30 June 1975 and one on 14 July 1975. Fourth order for ten (four Mk 1, six Mk 2) received October 1976 and delivery effected April 1977.

2 FAIREY MARINE "INTERCEPTOR" CLASS (FAST ASSAULT/RESCUE CRAFT)

Displacement, tons: 1·25
Dimensions, feet (metres): 25 × 8 × 2·5 *(7·9 × 2·4 × 0·8)*
Main engines: 2 Johnson outboard motors; 270 bhp = 35 knots
Range, miles: 150 at 30 knots
Complement: 3

In assault role can carry 10 troops. In rescue role carry number of life rafts. GRP catamaran hull. Delivered 28 November 1975.

1 FAIREY ALLDAY MARINE "BULLDOG" CLASS

A work-boat delivered in 1979.

ROMANIA

Headquarters' Appointment

Commander in Chief of the Navy:
Vice-Admiral Sebastian Ulmeanu

Diplomatic Representation

Defence Attaché in London:
Colonel Cornel Popa

Personnel

1981: 10 000 officers and ratings
(including 2 000 Coastal Defence)
(b) 2 years' national service

Bases

Mangalia, Constanta, Tulcea (Danube base)

Strength of the Fleet

(No details of building programme available)

Type	*Active*
Corvettes	3
Large Patrol Craft	3
Fast Attack Craft (Missile)	5
Fast Attack Craft (Gun and Patrol)	20
Fast Attack Craft (Torpedo)	25
River Patrol Craft	42
Minesweepers (Coastal)	4
Minesweepers (Inshore)	20
MSBs	8
Training Ships	2
Tugs	4

(Other unconfirmed vessels listed at end of section).

Mercantile Marine

Lloyd's Register of Shipping:
317 vessels of 1 856 292 tons gross

DELETIONS

1979 7 "P 4" class

CORVETTES

3 Ex-SOVIET "POTI" CLASS

V 31 V 32 V 33

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 200·1 × 25·9 × 9·2 *(61 × 7·9 × 2·8)*
Guns: 2—57 mm (twin)
Torpedo tubes: 4—16 in *(406 mm)*
A/S weapons: 2—MBU 6 000
Main engines: 2 gas turbines; 24 000 bhp; 2 M503A diesels; 8 000 shp; 2 shafts = 34 knots
Range, miles: 2 600 at 16 knots
Complement: 80

Transferred from the USSR in 1970.

Radar: Search: Strut Curve.
Fire control: Muff Cob.
Navigation: Don.

Soviet "POTI" Class *1971*

LIGHT FORCES

3 Ex-SOVIET "KRONSHTADT" CLASS (LARGE PATROL CRAFT)

V-1 V-2 V-3

Displacement, tons: 310 standard; 380 full load
Dimensions, feet (metres): 170·9 × 21·3 × 6·9 *(52·1 × 6·5 × 2·1)*
Guns: 1—3·4 in *(85 mm)*; 2—37 mm (single); 6—12·7 mm (twins)
A/S weapons: 2 DC throwers; 2 DC racks
Main engines: 3 diesels; 3 shafts; 3 300 bhp = 24 knots
Range, miles: 1 500 at 12 knots
Complement: 40

Transferred by the USSR in 1956.

Radar: Ball End.

"KRONSHTADT" Class

20 CHINESE "SHANGHAI" CLASS
(FAST ATTACK CRAFT—GUN and PATROL)

VP 20-29, VS 41-49, VENUS, SATURN

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: VP type: 1—57 mm; 2—37 mm (twin). VS type: 1—37 mm; 4—14·5 mm MGs
A/S weapons: VS type: two 5-barrelled MBU 1200; 2 DC racks
Main engines: 4 diesels; 4 800 bhp = 30 knots
Complement: 25

Three variants of the "Shanghai" class of which the VS type (patrol A/S) was a new departure and the two named craft differ greatly in their bridge superstructure. Built at Mangalia since 1973 in a continuing programme of about two a year. Revised total since last year.

"SHANGHAI" Class—VS Type *8/1974*

5 Ex-SOVIET "OSA I" CLASS (FAST ATTACK CRAFT—MISSILE)

194 to 198

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM: 4 SS-N-2 (single cells)
Guns: 4—30 mm (2 twin, 1 fwd, 1 aft)
Main engines: 3 M503A diesels; 3 shafts; 12 000 bhp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Transferred by the USSR in 1964.

Radar: Search: Square Tie.
Fire control: Drum Tilt.
IFF: High Pole and Square Head.

"OSA I" Class

19 CHINESE "HUCHUAN" CLASS
(FAST ATTACK CRAFT—TORPEDO)

VT 51-69

Displacement, tons: 39 full load
Dimensions, feet (metres): 71·5 × 16·6 × 3·3 *(21·8 × 5 × 1)*
Guns: 4—14·5 mm (twins)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3 diesels; 3 300 hp = 50+ knots (foilborne in calm conditions)
Range, miles: 500 cruising

Hydrofoils of the same class as the Chinese which were started in 1956.
Three imported from China. Remainder locally built in a continuing programme of about two a year which started 1973-74. Revised total since last year.

"HUCHUAN" Class *8/1974*

6 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

87 to 92

Displacement, tons: 22 standard; 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·5 mm (twin)
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 diesels; 2 400 bhp = 50 knots
Range, miles: 400 at 13 knots
Complement: 12

Built in 1955-56. Becoming obsolescent and ready for deletion. One has had guns removed.

Radar: Search: Skin Head.
IFF: High Pole and Dead Duck.

18 RIVER PATROL CRAFT

VB 76-93

Dimensions, feet (metres): 105 × 16 × 3 *(32 × 4·8 × 0·9)*
Guns: 1—85 mm; 4—25 mm (twins); 2—81 mm mortars
Complement: about 25

Built in Romania from 1973 in continuing programme of about two a year. Belong to Danube Flotilla.

River Patrol Craft *8/1974*

10 "VG" CLASS (RIVER PATROL CRAFT)

Displacement, tons: 40
Dimensions, feet (metres): 52·5 × 14·4 × 4 *(16 × 4·4 × 1·2)*
Guns: 2 MGs
Main engines: 2 diesels; 600 hp = 18 knots
Complement: 10

Steel-hulled craft built at Galata in 1954. Obsolescent. Belong to Danube Flotilla.

9 "SM 165" CLASS (RIVER PATROL CRAFT)

SM 161-169

Locally built from 1954-56. Belong to Danube Flotilla.

5 "SD 200" CLASS (RIVER PATROL CRAFT)

SD 270 274 275 277 278

MINE WARFARE FORCES

4 Ex-GERMAN "M 40" CLASS (MINESWEEPERS—COASTAL)

DESCATUSARIA DB 13 **DEMOCRATIA** DB 15
DESROBIREA DB 14 **DREPTATEA** DB 16

Displacement, tons: 543 standard; 775 full load
Dimensions, feet (metres): 206·5 × 28 × 7·5 *(62·3 × 8·5 × 2·3)*
Guns: 6—37 mm (twin); 3—20 mm (singles)
A/S weapons: 2 DCTs
Main engines: Triple expansion; 2 shafts; 2 400 ihp = 17 knots
Boilers: Two 3-drum water tube
Range, miles: 1 200 at 17 knots
Complement: 80

German "M Boote" design—designed as coal-burning minesweepers. Built at Galata. Converted to oil in 1951. The appearance of this class has been changed drastically during recent refits.

8 MINESWEEPERS (INSHORE)

VD 241-248

Building in Romania from 1975 onwards.

VD 241 Type (old number) *1979*

12 Ex-SOVIET "T 301" CLASS (MINESWEEPERS—INSHORE)

DR 6-9, 17-20, 26-29

Displacement, tons: 146 standard; 160 full load
Dimensions, feet (metres): 124·7 × 16·7 × 5·2 *(38 × 5·1 × 1·6)*
Guns: 2—37 mm; 4—12·7 mm MGs (twins)
Main engines: 2 diesels; 1 440 bhp; 2 shafts = 9 knots
Complement: 25

Transferred to Romania by the USSR in 1956-60. Probably half of these are non-operational. Two deleted 1975.

8 Ex-POLISH "TR-40" CLASS (MSBs)

VD 141-148

Displacement, tons: 50 standard; 70 full load
Dimensions, feet (metres): 92 × 13·6 × 2·5 *(28 × 4·1 × 0·8)*
Guns: 2 MGs (twin)
Main engines: 2 diesels; 2 shafts = 14 knots
Complement: 18

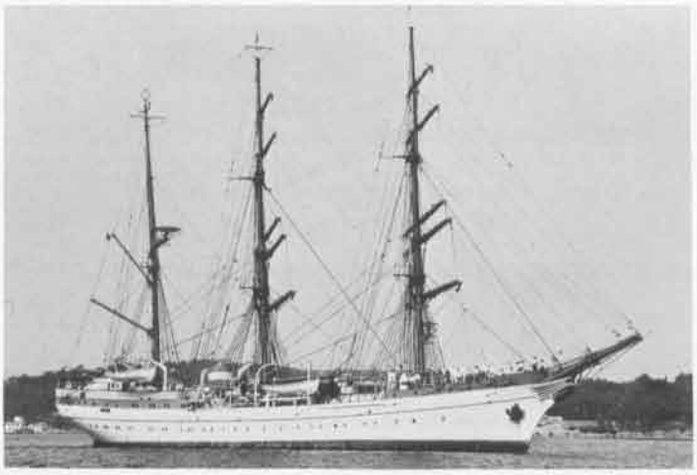
Employed on shallow water and river duties. These were originally a Polish class begun in 1955 but completed in Romania in late 1950s.

TRAINING SHIPS

Name	*No.*	*Builders*	*Commissioned*
MIRCEA	—	Blohm & Voss, Hamburg	29 Mar 1939

Displacement, tons: 1 604
Dimensions, feet (metres): 239·5 oa; 267·3 (with bowsprit) × 39·3 × 16·5 *(73; 81·5 × 12 × 5)*
Sail area: 18 830 sq ft
Main engines: Auxiliary MAN 6-cyl diesel; 500 bhp = 9·5 knots
Complement: 83 + 140 midshipmen for training

Laid down on 30 April 1938. Launched on 22 September 1938. Refitted at Hamburg in 1966.



MIRCEA *7/1980, Marius Bar*

1 TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
NEPTUN	—	Szczecin	1976

Of 5 600 tons and launched 29 April 1976.

NEPTUN *8/1980, L. and L. van Ginderen*

TUGS

4 "ROSLAVL" CLASS

VITEAZUL RM 101 **VOINICUL** — + 2

Displacement, tons: 450 full load
Dimensions, feet (metres): 135 × 29·5 × 10·8 *(41·2 × 9 × 3·3)*
Main engine: Diesel; 1 200 hp = 13 knots
Complement: 28

Built in Galata shipyard 1953-54.

AUXILIARIES

Although details are not available the following have been reported—two survey craft, three tankers, ten transports and twelve "Braila" class LCUs.

SABAH

(see also Malaysia)

Base

Labuan

2 "91 ft" PATROL BOATS

Name	*No.*	*Builders*	*Commissioned*
SRI GUMANTONG	—	Vosper Thornycroft Ltd, Singapore	8 Apr 1970
SRI LABUAN	—	Vosper Thornycroft Ltd, Singapore	6 Apr 1970

Sri Gumantong launched 18 August 1969. On detachment from Royal Malaysian Police (see Malaysian section for details).

1 YACHT

Name	*No.*	*Builders*	*Commissioned*
PUTRI SABAH	—	Vosper Thornycroft Ltd, Singapore	11 July 1971

Displacement, tons: 117
Dimensions, feet (metres): 91 × 19 × 5·5 *(27·8 × 5·8 × 1·7)*
Main engine: 1 diesel = 12 knots
Complement: 22

1 PATROL BOAT

KUALA BENGKOKA

Of 60 ft. Built by Mengsina Ltd, Singapore in 1976.

2 PATROL BOATS

Name	*No.*	*Builders*	*Commissioned*
SRI SEMPORNA	—	Chevertons, Isle of Wight	Feb 1975
SRI BANGJI	—	Chevertons, Isle of Wight	Feb 1975

Displacement, tons: 50
Dimensions, feet (metres): 55 × 15 × 3 *(16·8 × 4·6 × 0·9)*
Gun: 1—MG
Main engines: Diesels; 1 200 hp = 20 knots
Range, miles: 300 at 15 knots
Complement: 11

1 LCU

Name	*No.*	*Builders*	*Commissioned*
GAYA II	—	Sabang SY	28 Jan 1978

Measurement, tons: 220 gross
Main engine: Caterpillar diesel; 275 hp = 8 knots

ST. KITTS

Senior Appointment

Chief of Police:
Joseph F. C. Francis

Base

Basseterre

Mercantile Marine

Lloyd's Register of Shipping:
1 vessel of 256 tons

1 FAIREY MARINE "SPEAR" CLASS

Displacement, tons: 4·3
Dimensions, feet (metres): 29·8 × 9 × 2·8 *(9·1 × 2·8 × 0·8)*
Guns: Mountings for 2—7·62 mm
Main engines: 2 diesels; 360 hp = 30 knots
Complement: 2

Ordered for the police in June 1974—delivered 10 September 1974.

ST. LUCIA

Base

Castries

Control

This craft is run by the Customs Service.

Mercantile Marine

Lloyd's Register of Shipping:
5 vessels of 2 378 tons gross

1 BROOKE MARINE PATROL CRAFT

HELEN

Displacement, tons: 14
Dimensions, feet (metres): 40 × 11·7 × 4 *(12·2 × 3·4 × 1·3)*
Main engines: 2 Cummins V8 diesels; 2 shafts = 21 knots

Completed 20 July 1970.

ST. VINCENT AND THE GRENADINES

Senior Appointment

Chief of Police:
Superintendent E. B. Jackson

Base

Kingstown

Mercantile Marine

Lloyd's Register of Shipping:
35 vessels of 19 679 tons gross

1 VOSPER THORNYCROFT 75 ft PATROL CRAFT

GEORGE McINTOSH SVG 05

Displacement: 70 tons
Dimensions, feet (metres): 75 × 19·5 × 8 *(22·9 × 6 × 2·4)*
Guns: 2—20 mm

Ordered as a replacement for *Chatoyer* destroyed in a hurricane.

GEORGE McINTOSH *3/1981, Michael D. J. Lennon*

SAUDI ARABIA

Ministerial

Minister of Defence:
Amir Sultan ibn 'Abd al-'Aziz

Diplomatic Representation

Defence Attaché in London:
Colonel A. Ismail

Personnel

(a) 1981: 3 500 officers and men
(b) Voluntary service

Bases

Naval HQ: Riyadh
Main bases: Jiddah, Jubail (main facilities completed by early 1981)
Minor bases: Ras Tanura, Dammam, Yanbo, Ras al-Mishab

New Construction

In January 1972 an agreement was signed with the USA for a ten-year programme to provide six corvettes, four MSC, two coastal patrol craft, four LCTs, three training ships and two tugs. In addition orders have been placed in France, West Germany and the UK. To man these a considerable training programme is under way in the USA and Saudi Arabia. A further large order was placed in France in 1980.
Five Vulcan air defence systems and 100 Harpoon missiles ordered 1979.
$70·6 million to be spent on three naval bases.

Strength of the Fleet

Type	*Active*	*Building*
Frigates	0	4
Corvettes—Missile	4	—
Minesweepers—Coastal	4	—
Fast Attack Craft—Missile	7	2
Fast Attack Craft—Torpedo	3	—
Large Patrol Craft	1	—
Coastal Patrol Craft and Patrol Boats	35	—
Replenishment Tankers	0	2
Hovercraft	8	—
LCMs	8	—
LCUs	4	—
Tugs	3	—
Royal Yacht	1	—
Training Ship	1	—
SAR Launches	2	—
Customs Craft	6	—
Helicopters (Dauphin)	24	—

Mercantile Marine

Lloyd's Register of Shipping:
214 vessels of 1 589 668 tons gross

FRIGATES

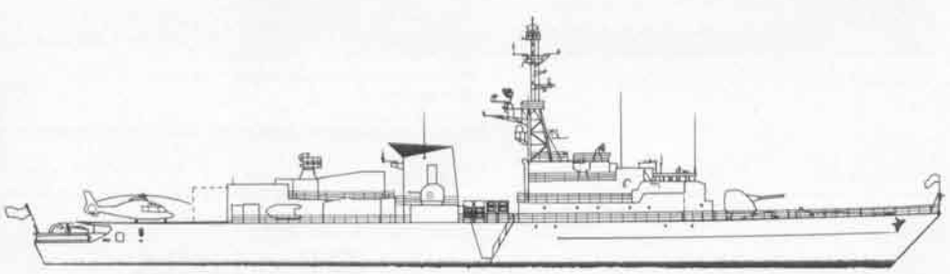
0 + 4 TYPE F 2000

Displacement, tonnes: 2 610 full load
Dimensions, feet (metres): 377·3 × 41 × 15·3 *(115 × 12·5 × 4·7)*
Aircraft: One Dauphin 2 SA365 helicopter (with telescopic hangar)
Missiles: SSM: 8—Otomat; SAM: Crotale Navale
Guns: 1—100 mm Creusot-Loire; 4—40 mm Breda Bofors (twins)
A/S weapons: 4 or 8 torpedo tubes aft
Main engines: 2 SEMT Pielstick 16 PA6 BTC diesels; 17 600 hp; 2 shafts
Speed, knots: 30 (half-load)
Range, miles: 6 500 at 18 knots
Complement: 179 (15 officers, 164 ratings)

Ordered in 1980, the major part of a FF14 000 million contract. The first is to be built at Lorient (DTCN) and the other three by CNIM at Seyne-sur-Mer. To be fitted with SNACH/SAPHIR folding fin stabilisers.

Countermeasures: CSEE Dagaie.

Electronics: SENIT tactical display system.



F 2000 Type

Radar: Air and surface surveillance.
IFF: Thomson CSF Sea Tiger system.

Sonar: Hull-mounted and VDS.

CORVETTES

4 MISSILE CORVETTES

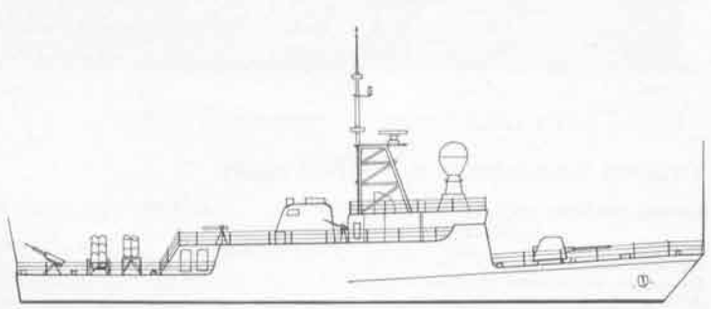
Name	*No.*	*Builders*	*Commissioned*
BADR	612	Tacoma Boatbuilding Co, Washington, USA	30 Nov 1980
AL YARMOOK	614	Tacoma Boatbuilding Co, Washington, USA	May 1981
HITTEEN	616	Tacoma Boatbuilding Co, Washington, USA	Aug 1981
TABUK	618	Tacoma Boatbuilding Co, Washington, USA	Nov 1981

Displacement, tons: 732 standard; 815 full load
Dimensions, feet (metres): 245 × 31·5 × 14·6 *(74·7 × 9·6 × 4·5)*
Missiles: SSM: 8 Harpoon (2 quad)
Guns: 1—76 mm/62; 2—20 mm Phalanx; 2—20 mm; 2—40 mm grenade launchers
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes
Main engines: CODOG: 1 General Electric LM2500 gas turbine; 16 500 hp; 2 MTU diesels; 3 000 hp; 2 shafts; cp propellers
Speed, knots: 30 on gas turbine; 16 on diesels
Complement: 58 (7 officers, 51 ratings)

Ordered 30 August 1977. Laid down and launch dates: 612—6 October 1979, 26 January 1980; 614—January 1980, 13 May 1980; 616—19 May 1980, 5 September 1980; 618—22 September 1980.
Fitted with fin stabilisers.

Radar: Surface warning: SPS 55.
Air warning: SPS 40B.
Fire control system: Mk 92.

Sonar: SQS 56.



Missile Corvette

LIGHT FORCES

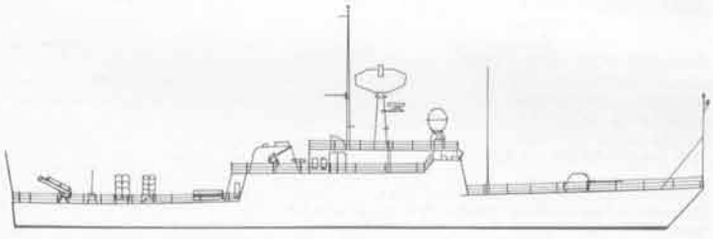
7 + 2 FAST ATTACK CRAFT (MISSILE)

Name	*No.*	*Builders*	*Commissioned*
AS SIDDIQ	511	Peterson Builders, Wisconsin	8 Dec 1980
AL FAROUQ	513	Peterson Builders, Wisconsin	1981
ABDUL AZIZ	515	Peterson Builders, Wisconsin	1981
FAISAL	517	Peterson Builders, Wisconsin	1981
KAHLID	519	Peterson Builders, Wisconsin	1981
AMYR	521	Peterson Builders, Wisconsin	1981
TARIQ	523	Peterson Builders, Wisconsin	1981
OQBAH	525	Peterson Builders, Wisconsin	1982
ABU OBAIDAH	527	Peterson Builders, Wisconsin	1982

Displacement, tons: 384 full load
Dimensions, feet (metres): 190·5 × 26·5 × 11 *(58·1 × 8·1 × 3·4)*
Missiles: SSM; 4 Harpoon (twin launchers)
Guns: 1—76 mm/62; 1—81 mm mortar; 2—20 mm Phalanx; 2—20 mm
Main engines: CODOG; 1 GE LM2500 gas turbine; 16 500 hp; 2 MTU diesels; 3 000 hp; 2 shafts (cp propellers)
Speed, knots: 38 (gas turbine); 15·5 (diesel)
Complement: 38 (5 officers, 33 ratings)

Ordered 1976. 511 laid down 30 September 1978, launched 22 September 1979; 513 laid down 12 March 1979, launched 17 May 1980; 515 laid down 3 October 1979, launched 23 August 1980; 517 laid down 11 March 1980, launched 15 November 1980; 519 laid down 27 June 1980, 521 laid down 19 October 1980; 523 laid down 19 November 1980.

Radar: Surface search: SPS 55.
Air search: SPS 40B.
Fire control: Mk 92.



Fast Attack Craft (Missile)

3 FDR "JAGUAR" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
DAMMAM	—	Lürssen, Vegesack	1969
KHABAR	—	Lürssen, Vegesack	1969
MACCAH	—	Lürssen, Vegesack	1969

Displacement, tons: 160 standard; 190 full load
Dimensions, feet (metres): 139·4 × 23 × 7·9 *(42·5 × 7 × 2·4)*
Guns: 2—40 mm
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 4 MTU diesels; 12 000 bhp = 42 knots
Complement: 33 (3 officers, 30 men)

Refitted in West Germany 1976.

"JAGUAR" Class *1974, Reiner Nerlich*

1 USCG TYPE (LARGE PATROL CRAFT)

RIYADH

Displacement, tons: 100 standard
Dimensions, feet (metres): 95·1 × 19 × 5·2 *(29 × 5·8 × 1·6)*
Gun: 1—40 mm
Main engines: 4 Cummins diesels; 2 shafts; 2 200 bhp = 21 knots
Complement: 15

Steel hulled patrol boat transferred to Saudi Arabia in 1969.

8 "P 32" TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 90
Dimensions, feet (metres): 105 × 17·6 × 9·8 *(32 × 5·3 × 2·9)*
Guns: 2—20 mm
Main engines: 2 MGO 12V diesels; 2 700 bhp; 2 shafts = 29 knots
Range, miles: 1 500 at 15 knots
Complement: 17

Wooden hulls sheathed with GRP. Sisters to Moroccan "El Wacil" class. Ordered from CMN (Cherbourg) January 1976.

"P 32" Type *1976, CMN*

12 "RAPIER" CLASS (COASTAL PATROL CRAFT)

127-138

Displacement, tons: 26
Dimensions, feet (metres): 50 × 15·1 × 4·6 *(15·2 × 4·6 × 1·4)*
Guns: 2 MGs
Main engines: 2 General Motors diesels; 1 300 bhp = 28 knots
Complement: 9

Three completed 1976, remainder in 1977 by Halter Marine, New Orleans.

15 "SKORPION" CLASS (COASTAL PATROL CRAFT)

139-148 +5

Measurement, tons: 25 gross
Dimensions, feet (metres): 55·8 × 16·1 × 9·2 *(17 × 4·9 × 2·8)*
Main engines: 2 diesels; 1 300 hp = 30 knots

Built by Bayerische SY, Erlenbach am Main. Shipped to Jiddah in October 1979 (139-148). Remainder built by Werft Union in 1979.

No 144 *10/1979, L. and L. van Ginderen*

2 Ex-US "40 ft" UTILITY BOATS

Transferred late 1960s.

8 SRN-6 HOVERCRAFT

050 051 +6

Displacement, tons: 10 normal (load 8 200 lbs)
Dimensions, feet (metres): 48·4 × 25·3 × 15·9 (height) *(14·8 × 7·7 × 4·8)*
Main engine: 1 Gnome model 1050 gas turbine
Speed, knots: 58

Acquired from British Hovercraft Corporation Ltd, between February and December 1970.

SRN-6 hovercraft *1971*

MINE WARFARE FORCES

4 "MSC 322" CLASS (MINESWEEPERS/HUNTERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
ADDRIYAH	MSC 412	Peterson Builders, Wisconsin	6 July 1978
AL QUYSUMAH	MSC 414	Peterson Builders, Wisconsin	15 Aug 1978
AL WADEEAH	MSC 416	Peterson Builders, Wisconsin	7 Sep 1979
SAFWA	MSC 418	Peterson Builders, Wisconsin	2 Oct 1979

Displacement, tons: 320 standard; 407 full load
Dimensions, feet (metres): 153 × 26·9 × 8·2 *(46·6 × 8·2 × 2·5)*
Guns: 2—20 mm (twin)
Main engines: 2 Wankesha L1616 diesels; 1 200 hp; 2 shafts = 13 knots
Complement: 39 (4 officers, 35 ratings)

Ordered on 30 September 1975 under the International Logistics Programme. Laid down—412, 12 May 1976; 414, 24 August 1976; 416, 28 December 1976; 418 March 1977. 412 launched 20 December 1976, 414 on 26 May 1977, 416 on 6 September 1977, 418 on 7 December 1977. Fitted with fin stabilisers, wire and magnetic sweeps and for hunting.

Radar: Surface warning: SPS 55.

Sonar: SQQ-14 (Minehunting).

AL QUYSUMAH *1980, L. and L. van Ginderen*

SERVICE FORCES

0 + 2 "DURANCE" CLASS

Displacement, tons: 17 800 full load
Dimensions, feet (metres): 515·9 × 69·5 × 28·5 *(157·3 × 21·2 × 8·7)*
Aircraft: 1 helicopter
Guns: 2—40 mm
Main engines: 2 SEMT Pielstick diesels 16PC 2·5; 2 shafts (vp propellers); 20 000 hp
Speed, knots: 19
Oil fuel, tons: 750
Range, miles: 9 000 at 15 knots
Complement: 150 plus 45 passengers

Ordered in France at the same time as the four frigates. Data above is for standard "Durance" class but the Saudi ships will be smaller.

1 TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
TEBUK	—	Bayerischen Schiffbau, Erlenbach, FDR	Dec 1977

Displacement, tons: 350
Dimensions, feet (metres): 196·8 × 32·8 × 5·8 *(60 × 10 × 1·8)*
Main engines: 2 MTU diesels; 5 260 bhp = 20 knots
Complement: 60

Ordered 1976.

1 SALVAGE TUG

JEDDAH 13

Displacement, tons: 350
Length, feet (metres): 112·8 *(34·4)*
Main engines: 2 diesels; 800 hp = 12 knots

Built at Hayashikane, Shimonoseki. Laid down 19 August 1977.

2 Ex-US YTB TYPE (HARBOUR TUGS)

TUWAIG (ex-*YTB 837*) EN 111 **DAREEN** (ex-*YTB 836*) EN 112

Displacement, tons: 350 full load
Dimensions, feet (metres): 109 × 30 × 13·8 *(31·1 × 9·8 × 4·5)*
Main engines: 2 diesels; 2 000 bhp; 2 shafts
Complement: 12

Transferred by US Navy 15 October 1975.

8 US LCM 6 TYPE

Displacement, tons: 62 full load
Dimensions, feet (metres): 56·2 × 14 × 3·9 *(17·1 × 4·3 × 1·2)*
Main engines: 2 diesels; 2 shafts; 450 hp = 9 knots

Four transferred July 1977 and four in July 1980. Capacity 34 tons or 80 troops.

4 Ex-US LCU 1610 TYPE

AL QIAQ (ex-*SA 310*) 212
AS SULAYEL (ex-*SA 311*) 214
AL ULA (ex-*SA 312*) 216
AFIF (ex-*SA 313*) 218

Displacement, tons: 200 light; 375 full load
Dimensions, feet (metres): 134·9 × 29 × 6·1 *(41·1 × 8·8 × 1·9)*
Guns: 2—5 MGs
Main engines: 4 diesels; 1 000 bhp; 2 Kort nozzles = 11 knots
Range, miles: 1 200 at 8 knots
Complement: 12-14

Transferred June/July 1976.

1 ROYAL YACHT

Name	*No.*	*Builders*	*Commissioned*
AL RIYADH	—	Van Lent (de Kaag), Netherlands	Jan 1978

Displacement, tons: 650
Dimensions, feet (metres): 228 × 34·4 × 10·8 *(69·5 × 10·5 × 3·3)*
Main engines: 2 diesels; 6 300 hp = 26 knots
Complement: 26 (accommodation for 18 passengers)

Ordered 12 December 1975. Laid down 6 May 1976. Launched 17 December 1977. Cost £7 million.

Fittings: Helicopter pad, sauna, swimming pool, hospital with intensive care unit.

2 AIR SEA-RESCUE LAUNCHES

ASR 1 **ASR 2**

With two diesels of 1 230 hp and capable of 25 knots. Belong to Ministry of Transportation.

COAST GUARD

Bases

Main bases: Ruwais (near Jeddah), Aziziyah (near Dammam)
Minor bases: Haqi, As Sharmah, Qizan

2 COASTAL PATROL CRAFT

West German built of 88·6 ft *(27 m)* with two General Motors diesels. Aluminium hulls.

7 COASTAL PATROL CRAFT

84-5, 88-91, 569

Of steel construction. 68·9 ft *(21 m)*. Persian Gulf (569), remainder in Red Sea.

33 COASTAL PATROL CRAFT

92, 97-105, 107-114, 116-7, 120-3, 125, 126, 565, 570-71, 574-577

Of steel construction. 44·3 ft *(13·5 m)*. "500" series in Persian Gulf, remainder in Red Sea.

6 COASTAL PATROL CRAFT

Constructed by Brooke Marine, UK in 1979. Two of 16 metres and four of 25 metres.

6 COASTAL PATROL CRAFT

1355, 1380, 1451-2, 1460-1

All built in Saudi Arabia. Steel hulled. 46·2 ft *(14·1 m)*. All in Red Sea.

8 COASTAL PATROL CRAFT

11-18

Japanese built with two General Motors diesels. 32·5 ft *(9·9 m)*. Nos 11 and 12 in Persian Gulf, remainder in Red Sea.

11 "45 ft" COASTAL PATROL CRAFT

Built by Whittingham and Mitchell, Chertsey, England. Armed with one ·5 calibre machine gun and powered with two 362 hp diesels.

43 "C 80" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 2·8
Dimensions, feet (metres): 29·3 × 9·3 × 1·5 *(8·9 × 2·9 × 0·6)*
Gun: 1 MG
Main engine: 1 Caterpillar diesel; 210 bhp; Castoldi pump jet unit = 20 knots

All delivered 1975. Built by Northshore Yacht Yards under sub-contract to Planning Associates Ltd (London). Contract 1974. GRP hulls.

1 COASTAL PATROL CRAFT

85

Steel hull. Of 25·6 ft *(7·8 m)*. In Red Sea.

1 COASTAL PATROL CRAFT

579

"Coronet" design. Of 23·6 ft *(7·2 m)*. In Persian Gulf.

2 COASTAL PATROL CRAFT

GRP hulls. Of 18·7 ft *(5·7 m)* with 85 hp Johnson engine.

10 FAIREY MARINE "23 ft HUNTRESS" CLASS PATROL BOATS

1-5, 229, 233-236

Built by Fairey Marine, Hamble, England. Capable of 20 knots with a cruising range of 150 miles and a complement of four. Nos 1-5 in Persian Gulf, remainder in Red Sea.

300 INSHORE PATROL CRAFT

There are 200 of 16·7 ft *(5·1 m)* with a 40 hp O-17 engine and 100 of 13·8 ft *(4·2 m)* with a 20 hp engine.

3 SMALL TANKERS

AL FORAT, DAJLAH +1

Of 88·6 ft *(27 m)*. Named ships in Red Sea.

MISCELLANEOUS

Two yachts *(Al Deriyah* and *Prominent)*, five barges and four motor dhows (1192, 1193, 1353, 1474).

SENEGAL

Ministerial

Minister of Armed Forces:
Amadon Cledor Sall

Personnel

(a) 1981: approx 350 officers and men
(b) 2 years' conscript service

Base

Dakar

Mercantile Marine

Lloyd's Register of Shipping:
87 vessels of 34 499 tons gross

DELETIONS

Light Forces

1974 *Sénégal*
1979 *Casamance, Sine-Saloum*

LIGHT FORCES

Note: Unconfirmed report that four patrol craft of 3·76 tons were ordered in January 1979 from Aresa, Barcelona.

1 "PR 72M" CLASS

Displacement, tons: 375 standard; 445 full load
Dimensions, feet (metres): 188·8 × 25 × 7·1 *(57·5 × 7·6 × 2·1)*
Guns: 1—76 mm Compact/72; 1—40 mm/70 (Breda Bofors)
Main engines: 4 AGO V16 diesels; 4 shafts; 11 040 hp = 28 knots
Range, miles: 2 500 at 16 knots
Complement: 53 (5 officers, 48 ratings)

Ordered 1979 from SFCN, France for delivery in June 1981. Can be fitted with Exocet.

Fire control: Two CSEE Naja optical directors.

3 "P 48" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SAINT LOUIS	—	Ch. Navales Franco-Belges	1 Mar 1971
POPENGUINE	—	Soc. Francais de Constructions Navales	10 Aug 1974
PODOR	—	Soc. Francais de Constructions Navales	13 July 1977

Displacement, tons: 250 full load
Dimensions, feet (metres): 156 × 23·3 × 8·1 *(47·5 × 7·1 × 2·5)*
Guns: 2—40 mm
Main engines: 2 MGO diesels; 1 shaft; 2 400 bhp = 23 knots
Range, miles: 2 000 at 16 knots
Complement: 33

Saint Louis laid down on 20 April 1970, launched on 5 August 1970. *Popenguine* laid down in December 1973, launched 22 March 1974. Sisters to *Malaika* of Malagasy, *Vigilant* and *Le Valereux* of Ivory Coast and "Bizerte" class of Tunisian Navy. *Podor* ordered August 1975, laid down December 1975, launched 20 July 1976.

"P 48" Class *1972*

3 "INTERCEPTOR" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SENEGAL II	—	Les Bateaux Turbec Ltd, Sainte Catherine, Canada	1979
SINE-SALOUM II	—	Les Bateaux Turbec Ltd, Sainte Catherine, Canada	16 Nov 1979
CASAMANCE II	—	Les Bateaux Turbec Ltd, Sainte Catherine, Canada	Aug 1979

Displacement, tons: 62
Dimensions, feet (metres): 86·9 × 19·3 × — *(26·5 × 5·8 × —)*
Guns: 2—20 mm
Main engines: 2 diesels; 2 700 hp = 32·5 knots

CASAMANCE II *9/1979, L. and L. van Ginderen*

1 TRAWLER TYPE

LES ALMADIES

Used previously on fishery protection.

12 VOSPER TYPE

Dimensions, feet (metres): 45 × 13·2 × 3·5 *(13·7 × 4 × 1·1)*
Guns: 1—12·7 mm; 2—7·62 mm
Main engines: 2 diesels; 920 hp = 25 knots
Complement: 6

1 FAIREY MARINE "LANCE" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 15·7 light
Dimensions, feet (metres): 48·7 × 15·3 × 4·3 *(14·8 × 4·7 × 1·3)*
Guns: 2—7·62 mm
Main engines: 2 General Motors 8 V 71 T1; 850 hp = 24 knots
Complement: 7

Completed June 1977 for customs service. Has capacity for boarding party of 12. Air-conditioned.

"LANCE" Class *1977, Fairey Marine*

1 FAIREY MARINE "SPEAR" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 4·3
Dimensions, feet (metres): 29·8 × 9 × 2·8 *(9·1 × 2·8 × 0·8)*
Guns: 1—12·7 mm; 2—7·62 mm
Main engines: 2 diesels; 360 hp = 30 knots
Complement: 4

Completed 28 February 1974 for Senegal Customs.

2 FAIREY MARINE "HUNTRESS" CLASS (COASTAL PATROL CRAFT)

Dimensions, feet (metres): 23·2 × 8·8 × 2·8 *(7·1 × 2·7 × 0·9)*
Main engine: 1 diesel; 180 hp = 29 knots
Complement: 2

Completed March 1974 for Senegal Customs.

AMPHIBIOUS FORCES

1 Ex-FRENCH EDIC (LCT)

LA FALENCE (ex-9095)

Displacement, tons: 250 standard; 670 full load
Dimensions, feet (metres): 193·5 × 39·2 × 4·5 *(59 × 12 × 1·3)*
Guns: 2—20 mm
Main engines: 2 MGO diesels; 2 shafts; 1 000 bhp = 8 knots
Complement: 6

Launched 7 April 1958. Transferred 1 July 1974.

2 Ex-US "LCM 6" CLASS

DIOU LOULOU (ex-6723) **DIOMBOS** (ex-6733)

Transferred July 1968. Of 26 tons.

1 TENDER

CRAME JEAN

An 18 ton fishing boat used as training craft.

SEYCHELLES

Base

Port Victoria, Mahé

Mercantile Marine

Lloyd's Register of Shipping:
10 vessels of 4 602 tons gross

1 Ex-FRENCH "SIRIUS" CLASS (LARGE PATROL CRAFT)

TOPAZ (ex-*Croix du Sud*, P 658)

Displacement, tons: 400 standard; 440 full load
Dimensions, feet (metres): 152 × 28 × 8·2 *(46·4 × 8·6 × 2·5)*
Guns: 1—40 mm; 1—20 mm
Main engines: 2 SEMT-Pielstick diesels; 2 shafts; 2 000 bhp = 15 knots
Range, miles: 3 000 at 10 knots
Complement: 38

Arrived Mahé 20 January 1979. Gift from France. Built by CMN, Cherbourg in 1956.

1 LANDING CRAFT (TANK)

Name	*No.*	*Builders*	*Commissioned*
CINQ JUIN	—	La Perrière, France	1979

Displacement, tons: 350
Dimensions, feet (metres): 186·8 × 38 × 6 *(56·9 × 11·6 × 1·9)*
Main engines: 2 Poyaud diesels; 880 hp = 9 knots

Ordered 12 December 1977. Although government owned this ship may be commercially operated.

SIERRA LEONE

Personnel

(a) 1981: 150 officers and men
(b) Voluntary service

Base

Freetown

Mercantile Marine

Lloyd's Register of Shipping:
12 vessels of 3 738 tons gross

2 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

002 **003**

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin); 4—25 mm (twin)
A/S weapons: 8 DCs
Mines: Mine rails can be fitted
Main engines: 4 diesels; 4 800 hp = 30 knots
Complement: 25

Transferred by China June 1973 and to Freetown Port Authority in 1979. One deleted in 1979.

Radar: Skin Head.

"SHANGHAI II" Class

SINGAPORE

Ministerial

Minister of Defence:
Howe Yoon Chong

Headquarters' Appointment

Commander of the Republic of Singapore Navy:
Colonel Khoo Eng An

Personnel

(a) 1981: 3 000 officers and men
(b) 2-3 years' national service and regular volunteers

Prefix to Ships' Names

RSS

Mercantile Marine

Lloyd's Register of Shipping:
988 vessels of 7 664 229 tons gross

LIGHT FORCES

6 LÜRSSEN "TNC 45" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
SEA WOLF	P 76	Lürssen Werft, Vegesack	1972
SEA LION	P 77	Lürssen Werft, Vegesack	1972
SEA DRAGON	P 78	Singapore Shipbuilding & Engineering Co	1974
SEA TIGER	P 79	Singapore Shipbuilding & Engineering Co	1974
SEA HAWK	P 80	Singapore Shipbuilding & Engineering Co	1975
SEA SCORPION	P 81	Singapore Shipbuilding & Engineering Co	1975

Displacement, tons: 230
Dimensions, feet (metres): 147·3 × 23 × 7·5 *(44·9 × 7 × 2·3)*
Missiles: SSM: 5 Gabriel (1 triple, 2 single)
Guns: 1—57 mm; 1—40 mm
Main engines: 4 MTU diesels; 4 shafts; 14 400 hp = 38 knots
Complement: 40

Designed by Lürssen Werft who built the first pair, *Sea Wolf* and *Sea Lion*, which arrived autumn 1972.

Fire control: Hollandse Signaal WM28.

SEA DRAGON *Lürssen Werft*

6 VOSPER THORNYCROFT DESIGN

3 "TYPE A" (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
INDEPENDENCE	P 69	Vosper Thornycroft Ltd, UK	8 July 1970
FREEDOM	P 70	Vosper Thornycroft Private Ltd, Singapore	11 Jan 1971
JUSTICE	P 72	Vosper Thornycroft Private Ltd, Singapore	23 Apr 1971

Displacement, tons: 100 standard
Dimensions, feet (metres): 109·6 × 21 × 5·6 *(33·5 × 6·4 × 1·8)*
Guns: 1—40 mm (fwd); 1—20 mm (aft)
Main engines: 2 Maybach (MTU 16 V538) diesels; 7 200 bhp = 32 knots
Range, miles: 1 100 at 15 knots
Complement: 19 to 22

On 21 May 1968 the Vosper Thornycroft Group announced the receipt of an order for six of their 110 ft fast patrol boats for Singapore. Two sub-types, the first of each *(Independence* and *Sovereignty)* built in UK, the remainder in Singapore. *Independence* was launched 15 July 1969. *Freedom* 18 November 1969 and *Justice* 20 June 1970.

INDEPENDENCE *1971, Vosper Thornycroft*

3 "TYPE B" (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
SOVEREIGNTY	P 71	Vosper Thornycroft Ltd, Portsmouth, England	Feb 1971
DARING	P 73	Vosper Thornycroft Private Ltd, Singapore	18 Sep 1971
DAUNTLESS	P 74	Vosper Thornycroft Private Ltd, Singapore	1971

Displacement, tons: 100 standard, 130 full load
Dimensions, feet (metres): 109·6 × 21 × 5·6 *(33·5 × 6·4 × 1·8)*
Guns: 1—76 mm Bofors; 1—20 mm Oerlikon
Main engines: 2 Maybach (MTU 16 V538) diesels; 7 200 bhp = 32 knots
Range, miles: 1 100 at 15 knots
Complement: 19 (3 officers, 16 ratings)

Sovereignty was launched 25 November 1969. *Dauntless* launched 6 May 1971. Steel hulls of round bilge form. Aluminium alloy superstructure.

Fire control: Hollandse Signaal M26.

DARING *1976, A. G. Burgoyne*

MINE WARFARE FORCES

2 Ex-US "REDWING" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*
JUPITER (ex-USS *Thrasher* MSC 203)	M 101
MERCURY (ex-USS *Whippoorwill* MSC 207)	M 102

Displacement, tons: 370 full load
Dimensions, feet (metres): 144 × 28 × 8·2 *(43·9 × 8·5 × 2·5)*
Gun: 1—20 mm *(Jupiter)*
Main engines: 2 General Motors diesels; 1 760 bhp; 2 shafts = 12 knots
Range, miles: 2 500 at 10 knots
Complement: 39

Transferred by sale 5 December 1975. Commissioned in US Navy 16 August 1955 and 20 October 1955 respectively.

MERCURY *1976, Singapore Navy*

TRAINING SHIPS

1 "FORD" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
PANGLIMA	P 68	United Engineers, Singapore	May 1956

Displacement, tons: 119 standard; 134 full load
Dimensions, feet (metres): 117·2 × 20 × 7 *(35·7 × 6·1 × 2·1)*
Guns: 1—40 mm/60; 1—20 mm
Main engines: 2 Paxman YHAXM supercharged B 12 diesels = 14 knots
Oil fuel, tons: 15
Complement: 15 officers and men

Laid down in 1954. Launched on 14 January 1956. Similar in most respects to the British seaward defence boats of the "Ford" class. Transferred to the Royal Malaysian Navy on the formation of Malaysia. Transferred to Singapore in 1967.

PANGLIMA *1975, Singapore Navy*

Name	*No.*	*Builders*	*Commissioned*
ENDEAVOUR	P 75	Schiffswerft Oberwinter, West Germany	30 Sep 1970

Displacement, tons: 250
Dimensions, feet (metres): 135 × 25 × 8 *(40·9 × 7·6 × 2·4)*
Guns: 2—20 mm
Main engines: 2 Maybach diesels; 2 600 bhp
Range, miles: 800 at 8 knots
Complement: 24

Training ship for divers.

ENDEAVOUR *1976, Singapore Navy*

AMPHIBIOUS FORCES

6 Ex-US "511-1152" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
ENDURANCE (ex-USS *Holmes County*, LST 836)	L 201 (ex-*A81*)	American Bridge Co	25 Nov 1944
EXCELLENCE (ex-US *LST 629*)	L 202 (ex-*A82*)	Chicago Bridge & Iron Co	28 July 1944
INTREPID (ex-US *LST 579*)	L 203 (ex-*A83*)	Missouri Valley B and I Co	21 June 1944
RESOLUTION (ex-US *LST 649*)	L 204 (ex-*A84*)	Chicago Bridge & Iron Co	26 Oct 1944
PERSISTENCE (ex-US *LST 613*)	L 205 (ex-*A85*)	Chicago Bridge & Iron Co	19 May 1944
PERSEVERANCE (ex-US *LST 623*)	L 206 (ex-*A86*)	Chicago Bridge & Iron Co	21 June 1944

Displacement, tons: 1 653 light; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 2—40 mm (singles) (see note)
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Complement: 120

Endurance loaned from the US Navy on 1 July 1971 and bought on 5 December 1975. Remainder transferred 4 June 1976. *Endurance* leased commercially in 1976; *Excellence, Intrepid* and *Resolution,* active; *Persistence* and *Perseverance* in reserve. Carry two LCVPs on davits.

Appearance: *Excellence, Intrepid* and *Resolution* underwent a conversion in 1977 in which a goal-post derrick was added forward of the bridge and the lattice mast was replaced by a pole mast.

Guns: *Excellence* does not mount a 40 mm in the bow, having no gun-tub.

INTREPID *3/1979, John Mortimer*

4 "AYER CHAWAN" CLASS (RPLs)

AYER CHAWAN, AYER MERBAN + 2

Displacement, tons: 150 full load
Dimensions, feet (metres): 88·5 × 22 × 4 *(27 × 6·9 × 1·3)*
Main engines: 2 diesels; 650 hp; 2 shafts = 10 knots

Built by Vosper Thornycroft, Singapore 1968-69.

2 "BRANI" CLASS (RPLs)

BRANI, BERLAYER

Displacement, tons: 56 full load
Dimensions, feet (metres): 55·7 × 14 × 4·6 *(17 × 4·3 × 1·4)*
Main engines: 2 diesels; 460 hp; 2 shafts = 9 knots

Built in Australia 1955-56.

SURVEY CRAFT

(Operated by Singapore Port Authority)

MATA IKAN

Of 125 tons. Launched 1967.

UTARA

Of 23 tons. Launched 1965.

GEMA

Of 5 tons. Launched 1966.

POLICE PATROL CRAFT

4 VOSPER THORNYCROFT TYPE

Name	*No.*	*Builders*	*Commissioned*
—	PX 10	Vosper Thornycroft Ltd, Portsmouth, England	1969
—	PX 11	Vosper Thornycroft Ltd, Portsmouth, England	1969
—	PX 12	Vosper Thornycroft Ltd, Portsmouth, England	1969
—	PX 13	Vosper Thornycroft Ltd, Portsmouth, England	1969

Displacement, tons: 40 standard
Length, feet (metres): 87 *(26·5)*
Guns: 2—20 mm

Built for marine police duties.

6 "CARPENTARIA" CLASS

Displacement, tons: 27 full load
Dimensions, feet (metres): 51·5 × 15·7 × 4·3 *(15·7 × 4·8 × 1·3)*
Guns: 2 MGs
Main engines: 2 MTU diesels; 1 220 hp = 28 knots
Range, miles: 950 at 18 knots
Complement: 10

Built by De Havilland Marine, Homebush Bay, Australia in 1979.

SOLOMON ISLANDS

Mercantile Marine

Lloyd's Register of Shipping:
12 vessels of 2 668 tons gross

1 "CARPENTARIA" CLASS

TULAGI

Displacement, tons: 27 full load
Dimensions, feet (metres): 51·5 × 15·7 × 4·3 *(15·7 × 4·8 × 1·3)*
Gun: 1 MG
Main engines: 2 General Motors diesels; 1 220 bhp = 28 knots
Range, miles: 950 at 18 knots
Complement: 10

Built by De Havilland Marine, Homebush Bay, Australia. Launched December 1978. Arrived Solomon Islands 4 May 1979.

TULAGI *1979, Graeme Andrews*

SOMALIA

Ministerial

Minister of Defence:
General Mohamed Ali Samantar

Command Appointment

Chief of Staff of the Armed Forces:
Major General Omar Haj Mohammed

Personnel

(a) 1981: 350 officers and men
(b) Voluntary service

General

With the withdrawal of the Soviet element from Somalia and the cessation of imports of equipment and spares the state of this navy will deteriorate unless replacements and refits are arranged outside the Soviet bloc.

Bases

Berbera, Mogadishu and Kismayu

Mercantile Marine

Lloyd's Register of Shipping:
22 vessels of 45 553 tons gross

LIGHT FORCES

2 Ex-SOVIET "OSA II" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (twins)
Main engines: 3 M504 diesels; 15 000 bhp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Transferred in December 1975.

"OSA II" Class

4 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 4 diesels; 4 shafts; 4 800 hp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Transferred in 1968.

4 Ex-SOVIET "MOL" CLASS (FAST ATTACK CRAFT—TORPEDO/PATROL)

Displacement, tons: 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Guns: 4—30 mm (twins)
Torpedo tubes: 4—21 in *(533 mm)* can be mounted on sponsons
A/S weapons: 12 DCs
Main engines: 3 M503 diesels; 13 500 bhp; 3 shafts = 36 knots
Complement: 30

Transferred 1976. Some do not carry torpedo tubes.

"MOL" Class 1976

5 Ex-SOVIET "POLUCHAT I" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 70 standard; 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm
Main engines: 2 diesels; 2 400 hp = 20 knots
Complement: 15

Transferred two in 1965, three in 1966.

AMPHIBIOUS FORCES

1 Ex-SOVIET "POLNOCHNIY-A" CLASS (LCT)

Displacement, tons: 800 full load
Dimensions, feet (metres): 239·5 × 29·2 × 5·8 *(73 × 8·9 × 1·8)*
Guns: 2—14·5 mm (twin)
Rocket launchers: 2—18-barrelled 140 mm launchers
Main engines: 2 diesels; 5 000 bhp = 18 knots
Complement: 40

Can carry six tanks. Transferred December 1976.

Soviet "POLNOCHNIY-A" Class

4 Ex-SOVIET "T 4" CLASS (LCMs)

Displacement, tons: 93 full load
Dimensions, feet (metres): 65·3 × 18·4 × 4·6 *(19·9 × 5·6 × 1·4)*
Main engines: 2 diesels; 2 shafts; 600 hp = 10 knots
Complement: 4

Transferred 1968-69.

SOUTH AFRICA

Ministerial

Minister of Defence:
General M. A. de M. Malan, SSA, SD, SM

Headquarters' Appointments

Chief of South African Defence Force:
General C. L. Viljoen, SSA, SM
Chief of the Navy:
Vice-Admiral R. A. Edwardes, SSA, SM
Chief of Naval Staff (Operations):
Rear-Admiral J. A. C. Weideman, SM

Diplomatic Representation

Defence Attaché in Bonn:
Commodore P. E. Blitzker
Armed Forces Attaché in Buenos Aires:
Captain W. H. Kelly, SM
A/Naval Attaché in Lisbon:
Lieutenant-Commander J. E. Louw
Naval Attaché in London:
Captain D. D. Hoy
Defence Attaché in Madrid:
Captain P. Murray
Naval Attaché in Paris:
Captain T. J. Honiball SM
Defence Attaché in Rome:
Captain E. T. Beddy
Defence Attaché in Washington:
Commodore W. N. Du Plessis

Personnel

(a) 1981: 6 758 (693 officers, 4 491 ratings and 1 574 national service ratings)
(b) Voluntary service plus 24 months' national service

Naval Bases

HM Dockyard at Simonstown was transferred to South Africa on 2 April 1957. The new submarine base at Simonstown, SAS *Hugo Biermann*, incorporating offices, accommodation and operations centre alongside a Synchrolift marine elevator, capable of docking all South African ships except the *Tafelberg*, was opened in July 1972.
A new Maritime Headquarters was opened in March 1973 at Silvermine on the Cape Peninsula.

Training

Use is made of Military College and Naval Gymnasium at Saldanha Bay. Naval College is at Gordon's Bay.

Air Sea Rescue Base

The SAAF Maritime Group base at Langebaan was transferred to the South African Navy on 1 November 1969, becoming SAN Sea Rescue Base (SAS *Flamingo*). The ASR launches were given Naval Coastal Forces numbers to replace SAAF "R" numbers.

Maritime Air

The SAAF operates an MP group consisting of 18 Piaggio P166s and 7 Shackleton MR 3. In addition 11 Wasp helicopters are available for embarkation in the frigates.

Marine Corps

A Marine Corps was inaugurated in July 1979, following their stand-down in 1957. Training is carried out at SAS *Simonsberg* (Simonstown), the first group having completed training in late 1979.

Prefix to Ships' Names

SAS (South African Ship)

Strength of the Fleet

Type	*Active*	*Building*
Submarines (Patrol)	3	—
Frigates	3	—
Fast Attack Craft—Missile	6	6
Large Patrol Craft	4	—
Minesweepers (Coastal) (see notes)	10	—
Survey Vessels	2	—
Fleet Replenishment Ship	1	—
BDV	1	—
TRV	1	—
Training Ship	1	—
Tugs	3	—
Harbour Patrol Launches	16	8
SAR Launches	4	—

Notes: (a) Two MSCs converted for minehunting and two for patrol duties.
(b) It is reported that the RSA is planning to acquire one or more Israeli-designed corvettes (see Israeli section for details).

Mercantile Marine

Lloyd's Register of Shipping:
286 vessels of 741 469 tons gross

DELETIONS

Destroyers

1976 *Simon van der Stel*
1978 *Jan van Riebeeck* (sunk as target 25 Mar 1980)

Frigates

1976 *Vrystaat* (sunk as target in Apr)
Good Hope, Transvaal (sunk as breakwaters in 1978)
Pietermaritzburg (shore accommodation ship)

Training Ship

1975 HDML 1204

PENNANT LIST

Submarines

S 97	Maria Van Riebeeck
S 98	Emily Hobhouse
S 99	Johanna Van der Merwe

Frigates

F 145	President Pretorius
F 147	President Steyn
F 150	President Kruger

Light Forces

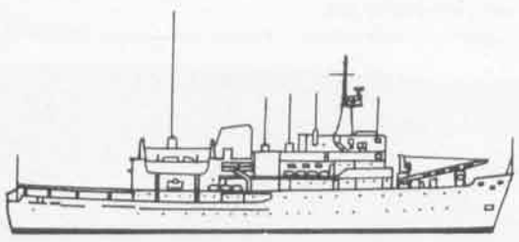
P 285	Somerset (BDV)
P 1556	Pretoria
P 1557	Kaapstad
P 1561	Jan Smuts
P 1562	Hendrik Mentz
P 1563	Frederic Creswell
P 1564	Jim Fouché
P 1565	Frans Erasmus
P 1566	Oswald Pirow
P 3105	Gelderland
P 3120	Nautilus
P 3125	Rijger
P 3126	Haerlem
P 3127	Oosterland
P 3148	Fleur (TRV)

Mine Warfare Forces

M 291	Pietermaritzburg
M 1207	Johannesburg
M 1210	Kimberley
M 1212	Port Elizabeth
M 1213	Mosselbaai
M 1214	Walvisbaai
M 1215	East London
M 1498	Windhoek
M 1499	Durban

Service Forces

A 243	Tafelberg
A 324	Protea
—	Agulhas
Y 1051	Namacurra



PROTEA

"PRESIDENT" Class

SUBMARINES

3 FRENCH "DAPHNE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MARIA VAN RIEBEECK	S 97	Dubigeon—Normandie, Nantes-Chantenay	14 Mar 1968	18 Mar 1969	22 June 1970
EMILY HOBHOUSE	S 98	Dubigeon—Normandie, Nantes-Chantenay	18 Nov 1968	24 Oct 1969	25 Jan 1971
JOHANNA VAN DER MERWE	S 99	Dubigeon—Normandie, Nantes-Chantenay	24 Apr 1969	21 July 1970	21 July 1971

Displacement, tons: 869 surfaced; 1 043 dived
Dimensions, feet (metres): 189·6 × 22·3 × 15·1
(57·8 × 6·8 × 4·6)
Torpedo tubes: 12—21·7 in *(550 mm)* (8 bow, 4 stern)
Main machinery: SEMT-Pielstick diesel electric; 2 diesels; 1 300 bhp; 2 electric motors; 1 600 hp; 2 shafts
Speed, knots: 13·5 surfaced; 16 dived
Range, miles: 4 500 at 5 knots (snorting)
Complement: 47 (6 officers, 41 men)

First submarines ordered for the South African Navy. They are of the French "Daphne" design, similar to those built in France for that country, Pakistan and Portugal and also built in Spain.

EMILY HOBHOUSE *1973, South African Navy*

FRIGATES

3 "PRESIDENT" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PRESIDENT PRETORIUS	F 145	Yarrow & Co, Scotstoun	21 Nov 1960	28 Sep 1962	4 Mar 1964
PRESIDENT STEYN	F 147	Alex Stephen & Sons, Govan	20 May 1960	23 Nov 1961	25 Apr 1963
PRESIDENT KRUGER	F 150	Yarrow & Co, Scotstoun	6 Apr 1959	20 Oct 1960	1 Oct 1962

Displacement, tons: 2 380 standard; 2 800 full load
Dimensions, feet (metres): 370 × 41·1 × 17·3
(112·8 × 12·5 × 5·3)
Aircraft: 1 Wasp helicopter
Guns: 2—4·5 in *(115 mm)*(twin Mk 6); 2—40/70 mm Bofors; 4—3 pdr (saluting)
A/S weapons: 6 (2 triple) Mk 32 torpedo tubes; 1 Limbo 3-barrel DC mortar
Main engines: 2 geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox 550 psi; 850°F
Speed, knots: 29
Oil fuel, tons: 430
Range, miles: 4 500 at 12 knots
Complement: 203 (13 officers, 190 men)

Originally "Rothesay" Type 12 frigates, *President Kruger* arrived in South Africa on 27 March 1963.

Modernisation: Refitted to carry a Wasp A/S helicopter, with hangar and landing deck. To accommodate this, one Limbo A/S mortar was removed and the two single 40 mm remounted on the hangar roof. *President Kruger* completed refit and recommissioned on 5 August 1969, *President Steyn* completed refit in 1971, when *President Pretorius* was taken in hand although delayed to take advantage gained from the previous conversions. Refit completed 12 July 1977. The refits were carried out at South Africa's Naval Dockyard, Simonstown and included replacement of the lattice foremast by a truncated pyramid tower. *Kruger* completed further modernisation in 1979. Small differences exist between all three ships.

Radar: Surveillance: Thomson CSF Jupiter.
Air/surface search: Type 293.
Fire control: Elsag NA9C.

PRESIDENT STEYN *(President Pretorius* similar) *12/1976, South African Navy*

PRESIDENT KRUGER (before modernisation) *7/1976, USN*

LIGHT FORCES

6 + 6 "MOD" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
JAN SMUTS	P 1561	Haifa Shipyard	Sep 1977
P. W. BOTHA	P 1562	Haifa Shipyard	Dec 1977
FREDERIC CRESWELL	P 1563	Haifa Shipyard	May 1978
JIM FOUCHÉ	P 1564	Durban	Dec 1978
FRANS ERASMUS	P 1565	Durban	July 1979
OSWALD PIROW	P 1566	Durban	Mar 1980

Displacement, tons: 430 full load
Dimensions, feet (metres): 204 × 25 × 8 *(62·2 × 7·8 × 2·4)*
Missiles: SSM; 6 Skorpioen (single cells)
Guns: 2—76 mm/62 (single Compact); 2—20 mm; 4—12·7 mm (twins)
Main engines: 4 Maybach diesels; 4 shafts; 12 000 hp = 32 knots
Range, miles: 1 500 at 30 knots; 3 600+ at economical speed
Complement: 47

Contract signed with Israel in late 1974 for this class, similar to "Saar 4" class. Three built in Haifa and reached South Africa in July 1978. Further six ordered in a contract signed 15 November 1977. These to be built at Durban.

Launch dates: P 1561, February 1977; P 1562, September 1977; P 1563, January 1978; P 1564, September 1978; P 1565, March 1979; P 1566, September 1979.

Missiles: Skorpioen of same performance as Gabriel II.

"MOD" Class *1979, A. S. Davis*

4 BRITISH "FORD" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
GELDERLAND (ex-*Brayford*)	P 3105	A. & J. Inglis Ltd, Glasgow	30 Aug 1954
NAUTILUS (ex-*Glassford*)	P 3120	Dunston, Thorne	23 Aug 1955
RIJGER	P 3125	Vosper Ltd, Portsmouth	1958
OOSTERLAND	P 3127	Vosper Ltd, Portsmouth	1959

Displacement, tons: 120 standard; 142 full load
Dimensions, feet (metres): 117·2 × 20 × 7 *(35·7 × 6·1 × 2·1)*
Gun: 1—40 mm
A/S weapons: 2 DCTs in *Oosterland* and *Rijger*
Main engines: 2 Davey Paxman diesels; Foden engine on centre shaft; 1 100 bhp = 18 knots
Complement: 19

Gelderland was purchased from Britain, and handed over to South Africa at Portsmouth on 30 August 1954. Second ship, *Nautilus* was handed over 23 August 1955, *Rijger* was launched on 6 February 1958, *Oosterland* on 27 January 1959. Both these later ships are fitted with Vosper roll damping fins.

RIJGER *12/1976, South African Navy*

SURVEY SHIPS

Name	*No.*	*Builders*	*Commissioned*
PROTEA	A 324	Yarrow (Shipbuilders) Ltd	23 May 1972

Displacement, tons: 2 733 full load
Dimensions, feet (metres): 260·1 × 49·1 × 15·6 *(79·3 × 15 × 4·7)*
Aircraft: 1 helicopter
Main engines: Diesel-electric; 3 Paxman/Ventura diesels; 3 840 bhp; 1 electric motor; 2 000 shp; 1 shaft and cp propeller
Speed, knots: 14
Oil fuel, tons: 450
Range, miles: 12 000 at 11 knots
Complement: 121 (10 officers, 104 ratings plus 7 scientists)

An order was placed with Yarrow (Shipbuilders) Ltd, for a "Hecla" class survey ship on 7 November 1969. Equipped for hydrographic survey with limited facilities for the collection of oceanographical data and for this purpose fitted with special communications equipment, naval surveying gear, survey launches and facilities for helicopter operations. Hull strengthened for navigation in ice and fitted with a transverse bow thrust unit and passive roll stabilisation system. Laid down 20 July 1970. Launched 14 July 1971.

PROTEA *1973, South African Navy*

HAERLEM P 3126

Built by Vosper Ltd, Portsmouth in 1959.
Converted July 1963 from "Ford" class for survey duties with a charthouse aft. Fitted with roll damping fins. Complement 23. See Light Forces section for details.

MINE WARFARE FORCES

10 BRITISH "TON" CLASS (MINESWEEPERS—COASTAL and MINEHUNTERS)

Name	*No.*	*Builders*	*Commissioned*
JOHANNESBURG (ex-HMS *Castleton*)	M 1207	White, Southampton	1958
KIMBERLEY (ex-HMS *Stratton*)	M 1210	Dorset Yacht Co	1958
PORT ELIZABETH (ex-HMS *Dumbleton*)	M 1212	Harland & Wolff, Belfast	1958
MOSSELBAAI (ex-HMS *Oakington*)	M 1213	Harland & Wolff, Belfast	1959
WALVISBAAI (ex-HMS *Packington*)	M 1214	Harland & Wolff, Belfast	1959
EAST LONDON (ex-HMS *Chilton*)	M 1215	Cook Welton and Gemmell	1958
WINDHOEK	M 1498	Thornycroft, Southampton	1959
DURBAN	M 1499	Camper & Nicholson, Gosport	1957
PRETORIA (ex-HMS *Dunkerton*)	P 1556	Goole Shipbuilding Co	1954
KAAPSTAD (ex-HMS *Hazleton*)	P 1557	Cook Welton and Gemmell	1954

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·6 × 8·5 × 2·5)*
Guns: 1—40 mm Bofors; 2—20 mm
Main engines: Mirrlees diesels in *Kaapstad* and *Pretoria*, 2 500 bhp; Deltic diesels in remainder; 3 000 bhp = 15 knots
Range, miles: 2 300 at 13 knots

Kaapstad and *Pretoria*, open bridge and lattice mast, were purchased in 1955 and converted with enclosed bridge and lattice mast in 1973. *Windhoek*, enclosed bridge and tripod mast, was launched by Thornycroft, Southampton, on 27 June 1957. *Durban*, enclosed bridge and tripod mast, was launched at Camper & Nicholson, Gosport, on 12 June 1957. *East London* and *Port Elizabeth*, transferred from the Royal Navy at Hythe on 27 October 1958, sailed for South Africa in November 1958. *Johannesburg*, *Kimberley* and *Mosselbaai* were delivered in 1959. *Walvisbaai* was launched by Harland & Wolff, Belfast on 3 July 1958 and delivered in 1959.

Minehunters: *Kimberley* converted to minehunter 1977-78—second undergoing conversion.

Patrol craft: *Kaapstad* and *Pretoria* employed on patrol duties and classified as Patrol Minesweepers.

KAAPSTAD (as patrol craft) *1977, Michael D. J. Lennon*

DURBAN *9/1980, Michael D. J. Lennon*

FLEET REPLENISHMENT SHIP

Name	*No.*	*Builders*	*Commissioned*
TAFELBERG (ex-*Annam*)	A 243	Nakskovs Skibsvaert, Denmark	1959

Measurement, tons: 12 500 gross; 18 980 deadweight
Dimensions, feet (metres): 559·8 × 72·1 × 30·2 *(170·6 × 21·9 × 9·2)*
Main engines: Burmeister and Wain diesels; 8 420 bhp = 15·5 knots
Complement: 100

Built as Danish East Asiatic Co tanker. Launched on 20 June 1958. Purchased by the Navy in 1965. Accommodation rehabilitated by Barens Shipbuilding & Engineering Co, Durban with extra accommodation, air conditioning, re-wiring for additional equipment, new upper RAS (replenishment at sea) deck to contain gantries, re-fuelling pipes. Remainder of conversion by James Brown & Hamer, Durban. A helicopter flight-deck was added aft during refit in 1975.

TAFELBERG *1977, Michael D. J. Lennon*

TORPEDO RECOVERY VESSEL

Name	No.	Builders	Commissioned
FLEUR	P 3148	Dorman Long (Africa) Ltd	3 Dec 1969

Displacement, tons: 220 standard; 257 full load
Dimensions, feet (metres): 121·5 × 27·5 × 11·1 *(37 × 8·4 × 3·4)*
Main engines: 2 Paxman Ventura diesels; 1 400 bhp
Complement: 22 (4 officers, 18 ratings)

Combined torpedo recovery vessel and diving tender.

FLEUR *9/1980, Michael D. J. Lennon*

BOOM DEFENCE VESSEL

Name	No.	Builders	Commissioned
SOMERSET (ex-HMS *Barcross*)	P 285	Blyth Dry Dock & S.B. Co Ltd	14 Apr 1942

Displacement, tons: 750 standard; 960 full load
Dimensions, feet (metres): 182 (horns) × 32·2 × 11·5 *(55·5 × 9·8 × 3·4)*
Main engines: Triple expansion; 850 hp = 11 knots
Boilers: 2 single ended
Oil fuel, tons: 186

Originally two in the class. Laid down on 15 April 1941, launched on 21 October 1941. Engined by Swan, Hunter & Wigham Richardson Ltd, Tyne.

SOMERSET *12/1976, South African Navy*

TRAINING VESSEL

Name	No.	Builders	Commissioned
NAVIGATOR	—	Fred Nicholls (Pty) Ltd, Durban	1964

Navigational training vessel. 75 tons displacement; 63 × 20 ft; two Foden diesels, 200 bhp = 9·5 knots. Based at Naval College, Gordon's Bay. Round bilge fishing boat—wooden hull.

HARBOUR PATROL VESSELS

16 + 8 "NAMACURRA" TYPE

Y 1051-1074

Length, feet (metres): 29·5 *(9)*
Guns: 2 MGs
A/S weapons: DCs
Complement: 4

Eight more on order.

"NAMACURRA" Type *1980, South African Navy*

AIR SEA RESCUE LAUNCHES

2 FAIREY MARINE "TRACKER" CLASS

Name	No.	Builders	Commissioned
—	P 1554	Groves and Gutteridge, Cowes	1973
—	P 1555	Groves and Gutteridge, Cowes	1973

Displacement, tons: 26
Dimensions, feet (metres): 64 × 16 × 5 *(19·5 × 4·9 × 1·5)*
Main engines: 2 diesels; 1 120 bhp = 28 knots

P 1554 *1973, South African Navy*

2 KROGERWERFT TYPE

Name	No.	Builders	Commissioned
—	P 1551 (ex-*R 31*)	Krogerwerft, Rendsburg	1962
—	P 1552 (ex-*R 30*)	Krogerwerft, Rendsburg	1961

Displacement, tons: 87
Dimensions, feet (metres): 96 × 19 × 4 *(29·3 × 5·8 × 1·2)*
Main engines: 2 diesels; 4 480 bhp = 30 knots

There are also two 24 ft tenders.

P 1552 *1977, Michael D. J. Lennon*

TUGS

Name	No.	Builders	Commissioned
DE NEYS	—	Globe Engineering Works Ltd, Cape Town	23 July 1969
DE NOORDE	—	Globe Engineering Works Ltd, Cape Town	Dec 1961

Displacement, tons: 170 and 180 respectively
Dimensions, feet (metres): 94 × 26·5 × 15·75 and 104·5 × 25 × 15 *(28·7 × 8·7 × 4·8; 34·2 × 8·2 × 4·6)*
Main engines: 2 Lister-Blackstone diesels; 2 shafts; 608 bhp = 9 knots
Complement: 10

De Neys fitted with Voith-Schneider screws.

DE MIST

Displacement, tons: 275
Dimensions, feet (metres): 111·5 × 29·5 × 9·8 *(34 × 9 × 3)*
Main engines: 2 Lister Blackman diesels; Voith Schneider screws = 12 knots

Completed by Dorman Long (S.A.) Ltd in December 1978.

DEPARTMENT OF TRANSPORT

1 ANTARCTIC SURVEY AND SUPPLY VESSEL

Name	No.	Builders	Commissioned
AGULHAS	—	Mitsubishi, Shimonoseki	31 Jan 1978

Measurement, tons: 3 050 deadweight
Dimensions, feet (metres): 358·3 × 59 × 19 *(109·2 × 18 × 5·8)*
Aircraft: 2 helicopters
Main engines: 2 Mirrlees-Blackstone diesels; 6 000 shp; 1 shaft = 14 knots
Range, miles: 8 200 at 14 knots
Complement: 40 (92 spare berths)

Ordered 11 August 1976. Laid down 14 June 1977. Launched 30 September 1977.

SPAIN

Ministerial

First Deputy Premier for Security Affairs and National Defence:
Lieutenant-General Manuel Gutiérrez Mellado
Defence Minister:
Señor Alberto Oliart

Headquarters' Appointments

(In 1977 all three Service Ministries were combined in a single Ministry of Defence)

Chief of the Naval Staff:
Admiral Excmo Sr Don Luis Arevalo Pelluz
Chief of Fleet Support:
Admiral Excmo Sr Don Miguel Romero Moreno
Vice Chief of the Naval Staff:
Vice-Admiral Excmo Sr Don Saturnino Soances

Commands

Commander-in-Chief of the Fleet:
Vice-Admiral Excmo Sr Don Manuel Manso Quijano
Captain General, Cantabrian Zone:
Admiral Excmo Sr Don Manuel Romero
Captain General, Straits Zone:
Admiral Excmo Sr Don Vicente Alberto y Lloveres
Captain General, Mediterranean Zone:
Admiral Excmo Sr Don Juan Carlos Muñoz Delgado y Pinto
Commandant General, Marines:
Lieutenant-General Excmo Sr Don Jose Rincon Dominguez

Diplomatic Representation

Naval Attaché in London:
Captain Don J. M. Gonzalez-Aldama
Naval Attaché in Washington:
Captain Sr Don Obrador Sierra

Personnel

(a) 1981: Total 44 800 (4 085 officers, 32 669 ratings, 8 046 civil branch)
Infanteria de Marina 10 614 (614 officers, 10 000 marines)
(b) 18 months' national service

Bases

Ferrol: Cantabrian Zone HQ—Ferrol arsenal, support centre at Graña, naval school at Marín, Pontevedra, electronics school at Ríos, Vigo
Cadiz: Straits Zone HQ—La Carraca arsenal, naval air base at Rota, amphibious base at Puntales, Tarifa small ships' base
Cartagena: Mediterranean Zone HQ—Cartagena arsenal, support station at La Algameca, support base at Mahón, Minorca, Palma arsenal, Majorca, submarine weapons school at Sóller, Majorca
Canaries: Las Palmas arsenal (new base planned)

Naval Air Service

9 Harrier AV-8A (Matador) (1 on order for delivery 1981)
2 Harrier TAV-8A (Matador)
10 Bell 47G (and derivatives) helicopters
12 AB 212 (with AS-12 missiles)
15 Sikorsky SH-3D Sea King (with AS-12 missiles)
11 Hughes 500 M(ASW)
4 Bell AH-1G (Huey Cobra)
2 Piper Comanche
2 Twin Comanche

Infanteria de Marina: This Marine Corps consists of four "Tercios" (intermediate between a regiment and a brigade) based in Ferrol, Cádiz, Cartagena and Puntales (Cádiz). The first three are for base defence while the fourth, Tercio de Armada, is a brigade-sized assault force. This last has two landing battalions, a support fighting group and a logistic group and is provided with LVTP-7, 18 M48S tanks (to be reinforced by 36 AMX30), SP artillery including M-52 (105 mm), Panhard M-3 and AML-245 with 60 mm mortars, and towed OTO Melara 105 mm guns. Infantry support weapons include 106 mm M-40 recoilless rifles, 120, 81 and 60 mm ECIA mortars and Rasura radar. The Pegaso 3550 3 ton amphibious truck is now being introduced. Anti-tank Tow and Dragon missiles in service.

Strength of the Fleet

Type	Active	Building (Planned)
Submarines—Patrol	10	2
Aircraft Carriers	1	1
Destroyers	11	—
Frigates	17	3 (3)
Fast Attack Craft—Patrol	12	—
Large Patrol Craft	8	4
Coastal Patrol Craft	34	—
Inshore Patrol Craft	30	—
LSD	1	—
Attack Transports	2	—
LSTs	3	—
LCTs	7	—
Minor Landing Craft	80	—
Minesweepers—Ocean	4	—
Minesweepers—Coastal	11	—
Survey Ships	6	—
Replenishment Tanker	1	—
Harbour Tankers	15	—
Training Ship	1	—
Tugs (Ocean, Coastal and Harbour)	30	—
Miscellaneous	37	—

New Construction

Because of financial considerations the current programme has been cut to the following; one aircraft carrier; three FFG-7 class frigates; eight corvettes and four "Agosta" class submarines.
The next phase, 1983-90, envisages the building of a second carrier, two cruisers, eight more frigates (FFG7 or derivative), two Tripartite minehunters, a fleet tanker and four light transports as well as the purchase of ten Matador (Harrier), six maritime patrol and four A/S aircraft. The target is two task groups (one carrier, one cruiser and four FFGs) and four escort groups (two FFGs, two frigates). Building costs at current prices for these additional ships, 241·1 million pesetas.

Fleet Deployment

1. Flota
   (a) Grupo Aeronaval: (based at Rota)
   Dédalo with appropriate escorts
   (b) Mando de Escoltas: (HQ at Ferrol)
   11th Squadron; 5 "Gearing" class, (based at Ferrol)
   21st Squadron; 5 "Fletcher" class
   31st Squadron; 5 "Baleares" class (based at Ferrol)
   (c) Mando Anfibio: (based at Puntales, Cádiz)
   All Amphibious Forces
   (d) Mando de Medidas contra Minado: (HQ at Palma de Mallorca)
   MSCs 21,25,27,29 (based at Graña/Ferrol)
   MSO 41 (based at Rota)
   All remaining MCM forces (based at Palma)
   (e) Flotilla de Submarinos: (based at Cartagena)
   All submarines
2. Support units, Cantabrian Zone:
   1 "Roger de Lauria" class, 1 Frigate, 7 Patrol Craft, 8 Tugs, 2 Water-boats
   16 Service Craft (Ferrol)
   6 Service Craft (Graña)
   1 Frigate, 1 Yacht, 7 Service Craft (Marín)
   4 Patrol Craft
3. Support units, Straits Zone:
   4 Frigates, 8 Patrol Craft, all Survey Vessels
   6 Tugs, 1 Water-boat, 18 Service Craft
4. Support units, Mediterranean Zone:
   1 "Roger de Lauria" class, 1 Tanker, 3 Patrol Craft, 8 Diving Support Vessels, 7 Tugs, 1 Water-boat, 9 Service Craft (Cartagena)
   2 Patrol Craft (La Algameca)
   3 Service Craft (Mahón)
   6 Patrol Craft
5. Support units, Canaries:
   3 Patrol Craft, 4 LCTs, 2 Tugs, 1 Water-boat, 5 Service Craft (Las Palmas)

Mercantile Marine

Lloyd's Register of Shipping:
2 767 vessels of 8 112 245 tons gross

DELETIONS

Submarines

1977 *SA 51, SA 52* ("Tiburon" class)
Narciso Monturiol (old) (broken up 1980)

Cruiser

1975 *Canarias* (17 Dec)

Destroyers

1978 *Oquendo* ("Oquendo" class) (2 Nov),
Almirante Ferrandiz

Frigates

1974 *Audaz, Furor, Rayo* ("Audaz" class), *Jupiter* ("Jupiter" class), *Sarmiento de Gamboa* ("Pizarro" class)
1975 *Meteoro, Relampago, Temerario,* ("Audaz" class)
1977 *Vulcano* ("Jupiter" class)
1978 *Alava* ("Alava" class) (2 Nov),
Legazpi ("Pizarro" class) (4 Nov)

Corvette

1978 *Descubierta* ("Atrevida" class) (17 Nov)

Mine Warfare Forces

1976 *Tinto* ("Guadiaro" class) (31 Jan)
1977 *Eume* (1 Sep); *Guadiaro* (15 May); *Almanzora* ("Guadiaro" class)
1978 *Guadalhorce, Eo* ("Guadiaro" class) (2 Nov)
1979 *Navia* ("Guadiaro" class) (23 July)
Llobregat ("Nalon" class) (4 July)

Amphibious Forces

1974 *LSM 3*
1976 *LSM 1, LSM 2*
1978 *BDK 1* (15 Oct)

Light Forces

1974 *V 2, V 12, V 13, V 18, Candido Pérez, RR 10* (Coastal Launches)
1977 *LT 30, LT 31* (Lürssen Type). RR 19, 20 (20 Apr)
Centinela and *Serviola* (Fishery Protection—to Mauritania 5 Mar 1977)
1978 *V 9* (31 Mar)
1979 *V 10, V 11, V 21, V 31, V 32*

Survey Ships

1975 *Tofiño, Juan de la Cosa* (30 Apr)

Service Forces

1974 *PB 17* (tanker)
1975 *PP 2* (tanker)
1977 *Almirante Lobo* (30 Apr), *A 1* (14 Mar), *A 8* (30 Apr), *AB 10* (19 May), *BL 10* (20 Apr)

PENNANT LIST

Note: There has been a considerable change in pennant numbers but owing to lack of official information the following may be incomplete.

Submarines

S 31	Almirante Garcia de los Reyes
S 32	Isaac Peral
S 34	Cosme Garcia
S 35	Narciso Monturiol
S 61	Delfin
S 62	Tonina
S 63	Marsopa
S 64	Narval
S 71-74	New Construction

Aircraft Carriers

R 01	Dédalo
R 11	New Construction

Destroyers

D 21	Lepanto
D 22	Almirante Ferrandiz
D 23	Almirante Valdés
D 24	Alcalá Galiano

Destroyers

D 25	Jorge Juan
D 42	Roger de Lauria
D 43	Marqués de la Ensenada
D 61	Churruca
D 62	Gravina
D 63	Méndez Nuñez
D 64	Lángara
D 65	Blas de Lezo

Frigates

D 38	Intrépido
D 51	Liniers
F 31	Descubierta
F 32	Diana
F 33	Infanta Elena
F 34	Infanta Cristina
F 35	Cazadora
F 36	Vencedora
F 37	Centinela
F 38	Serviola

Frigates

F 71	Baleares
F 72	Andalucia
F 73	Cataluña
F 74	Asturias
F 75	Extremadura
PA 41	Vicente Yáñez Pinzon
PA 61	Atrevida
PA 62	Princesa
PA 64	Nautilus
PA 65	Villa de Bilbao

Light Forces

PC 01	Lazaga
PC 02	Alsedo
PC 03	Cadarso
PC 04	Villamil
PC 05	Bonifaz
PC 06	Recalde
PC 11	Barceló
PC 12	Laya
PC 13	Javier Quiroga

Light Forces

PC 14	Ordóñez
PC 15	Acevedo
PC 16	Candido Pérez
PVC 01	Alcatraz
PVI 01	Cabo Fradera
PVZ 11	Salvora
PVZ 21	Anaga
PVZ 22	Togomago
PVZ 23	Marola
PVZ 24	Moura
PVZ 25	Grosa
PVZ 26	Medas
PVZ 27	Izaro
PVZ 28	Tabarca
PVZ 29	Deva
PVZ 61	Gaviota
PVZ 71	Nécora
PVZ 72	Percebe
PVZ 210	Bergantin
RR 29	
V-1	
V-5	
V-6	

Amphibious Forces

L 11	Velasco
L 12	Martin Alvarez
L 13	C. de Venadito
L 21	Castilla
L 22	Aragón
L 31	Galicia

Mine Warfare Forces

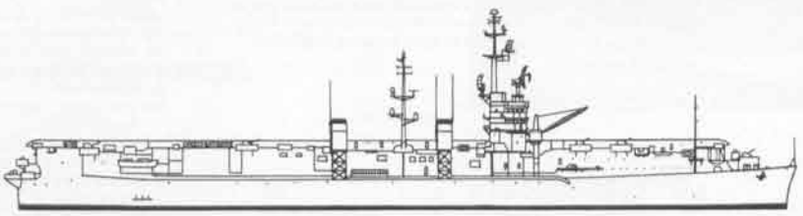
M 21	Jucar
M 22	Ebro
M 23	Duero
M 24	Tajo
M 25	Genil
M 26	Odiel
M 42	Guadalmedina
M 43	Guadalquivir
M 44	Guadiana
PVZ 41	Guadalete
PVZ 51	Nalón
PVZ 52	Ulla
PVZ 53	Miño
PVZ 54	Turia
PVZ 55	Sil

Survey Ships

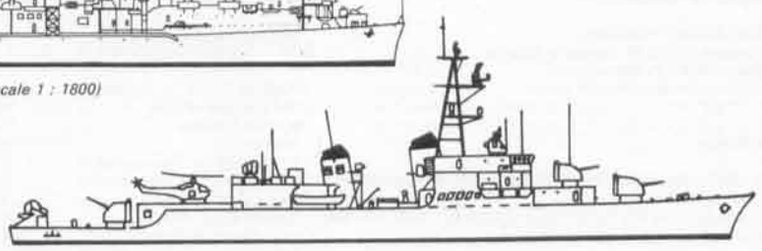
AH 21	Castor
AH 22	Pollux
AH 23	Antares
AH 24	Rigel
AH 31	Malaspina
AH 32	Tofiño

Service Forces
(The majority of these have no name and are known only by their numbers)

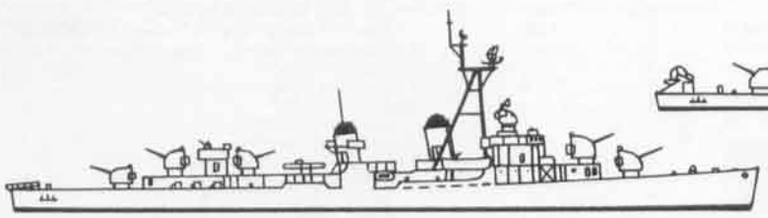
A 01	Juan Sebastian de Elcano
A 11	Azor
AP 11	Teide
AS 01	Poseidon
YBZ 11	Nereida



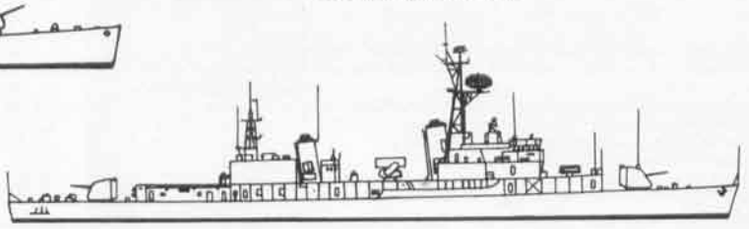
DEDALO *(scale 1 : 1800)*



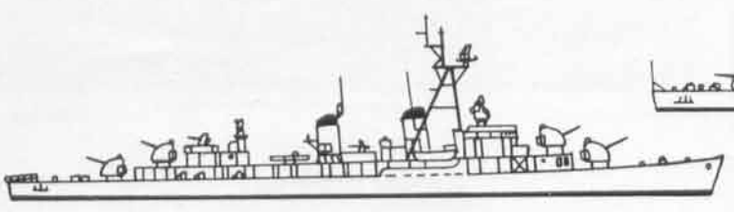
"ROGER DE LAURIA" Class



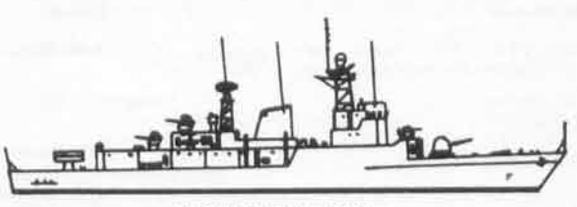
LEPANTO



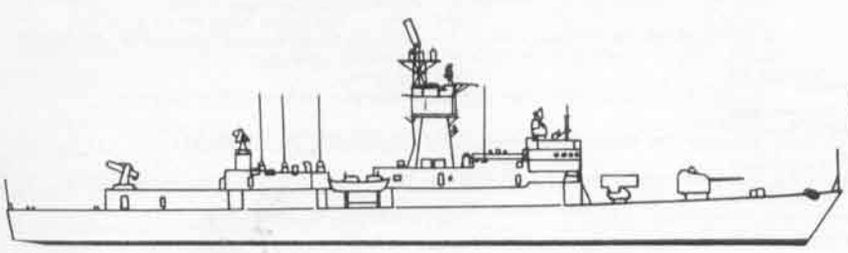
Ex-US "GEARING" (D 60) Class



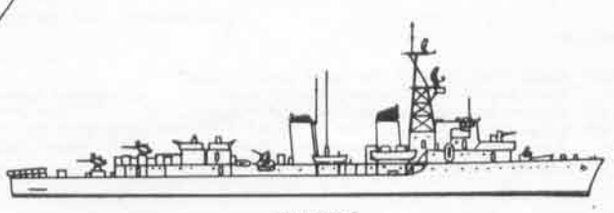
ALCALA GALIANO, JORGE JUAN and VALDES



"DESCUBIERTA" (F 30) Class



"BALEARES" (F 70) Class



INTREPIDO

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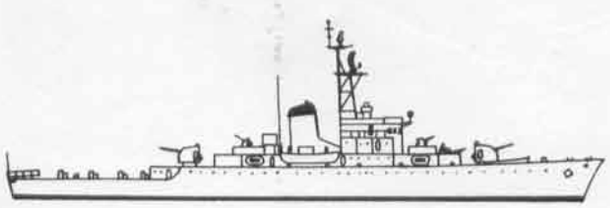

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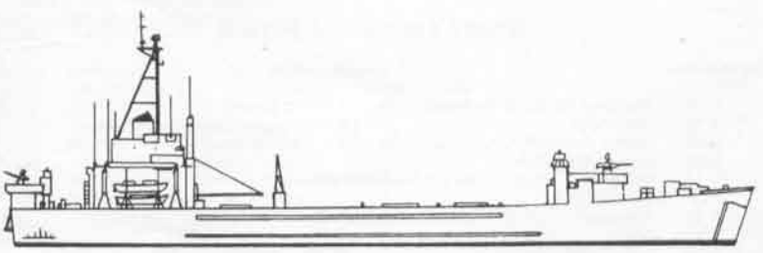


"TERREBONNE PARISH" (L 10) Class

SUBMARINES

2 + 2 "S 70" CLASS (FRENCH "AGOSTA" CLASS)

Name	No.	Builders	Laid down	Launched	Commissioned
—	S 71	Bazán, Cartagena	5 Sep1977	1980	1981
—	S 72	Bazán, Cartagena	1978	1981	1981
—	S 73	Bazán, Cartagena	—	1983	1983
—	S 74	Bazán, Cartagena	—	1984	1984

Displacement, tons: 1 450 surfaced; 1 725 dived
Dimensions, feet (metres): 221·7 × 22·3 × 17·7 *(67·6 × 6·8 × 5·4)*
Torpedo tubes: 4—21·7 in *(550 mm)* (16 reloads or a total of 9 torpedoes and 19 mines)
Main machinery: Diesel-electric; 2 diesels; 3 600 hp; 1 main motor; 6 400 hp; 1 cruising motor; 1 shaft
Speed, knots: 12 surfaced; 17·5 dived
Fuel, tons: 185
Range, miles: 9 000 at 9 knots (snorting); 350 at 3·5 knots (dived)
Endurance: 45 days
Complement: 50

First two ordered 9 May 1975 and second pair 29 June 1977. Building with some French advice.
About 67 per cent of equipment and structure from Spanish sources. Diving depth 300 m.

Cost: Approximately 4 500 million pesetas (1977 prices).

Missiles: Submarine Exocet may be carried.

Radar: DRUA-33C.

Sonar: Two DUUA-21 active; one DSUV-2H passive; DUUX-2A range finder.

FRENCH "Agosta" Class — *1977, French Navy*

4 "S 60" CLASS (FRENCH "DAPHNE" CLASS)

Name	No.	Builders	Laid down	Launched	Commissioned
DELFIN	S 61	Bazán, Cartagena	13 Aug 1968	25 Mar 1972	3 May 1973
TONINA	S 62	Bazán, Cartagena	1969	3 Oct 1972	10 July 1973
MARSOPA	S 63	Bazán, Cartagena	19 Mar 1971	15 Mar 1974	12 Apr 1975
NARVAL	S 64	Bazán, Cartagena	1971	14 Dec 1974	22 Nov 1975

Displacement, tons: 870 surfaced; 1 040 dived
Dimensions, feet (metres): 189·6 × 22·3 × 15·1 *(57·8 × 6·8 × 4·6)*
Torpedo tubes: 12—21·7 in *(550 mm)* (8 bow, 4 stern) (no reloads — mining capability)
Main machinery: SEMT-Pielstick diesel-electric; 2 600 bhp surfaced; 2 700 hp dived; 2 shafts
Speed, knots: 13·2 surfaced; 15·5 dived
Range, miles: 4 500 at 5 knots (snorting); 2 710 at 12·5 knots (surfaced)
Complement: 47 (6 officers, 41 men)

Identical to the French "Daphne" class and built with extensive French assistance. First pair ordered 26 December 1966 and second pair in March 1970. S 63 cost 1 040 million pesetas. Diving depth 300 m.

Radar: Thompson CSF DRUA-31 plus ECM.

Sonar: Active, DUUA 1; Passive with range finding, DSUV. Goniometer; DUUG-1.

TONINA — *6/1975, Dr. Giorgia Arra*

3 "S 30" CLASS (Ex-US GUPPY IIA TYPE)

Name	No.	Builders	Laid down	Launched	Commissioned
ISAAC PERAL (ex-USS *Ronquil*, SS 396)	S 32	Portsmouth Navy Yard	9 Sep 1943	27 Jan 1944	22 Apr 1944
COSME GARCÍA (ex-USS *Bang*, SS 385)	S 34	Portsmouth Navy Yard	30 Apr 1943	30 Aug 1943	4 Dec 1943
NARCISO MONTURIOL (ex-USS *Jallao*, SS 368)	S 35	Manitowoc S.B. Corporation	29 Sep 1943	12 Mar 1944	8 July 1944

Displacement, tons: 1 840 surfaced; 2 445 dived
Dimensions, feet (metres): 306 × 27 × 17 *(93·3 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in *(533 mm)* 6 bow, 4 stern
Main machinery: 3 Fairbanks-Morse diesels; total 4 800 bhp; 2 shafts; 2 Elliot electric motors; 5 400 shp
Speed, knots: 18 surfaced; 14 dived
Oil fuel, tons: 464 (472 in SS 35)
Range, miles: 12 000 at 10 knots
Complement: 74

Transferred to Spain on 1 July 1971 *(Peral)* 1 October 1972 *(García)* and 26 June 1974 *(Narciso Monturiol)*. *García* purchased 18 November 1974 the other pair being transferred by sale. Original *Narciso Monturiol* deleted, as expected after her mechanical problems of 1975, on 30 April 1977, her name being transferred to S 35. Diving depth 140 m.

Electronics: Mk 106 TDC.

Radar: SS 2.

Sonar: BQS, BQR.

COSME GARCÍA — *1973, Royal Spanish Navy*

1 Ex-US "BALAO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ALMIRANTE GARCÍA DE LOS REYES (ex-USS *Kraken*, SS 370)	S 31	Manitowoc S.B. Co	13 Dec 1943	30 Apr 1944	8 Sep 1944

Displacement, tons: 1 816 surfaced; 2 400 dived
Dimensions, feet (metres): 311·5 × 27·2 × 17·2 *(95 × 8·3 × 5·2)*
Torpedo tubes: 10—(6—21 in *(533 mm)* and 4 for A/S torpedoes)
Main machinery: 4 diesels; 6 400 bhp; 2 main motors; 4 600 shp; 2 shafts
Speed, knots: 18·5 surfaced; 10 dived
Oil fuel, tons: 472
Range, miles: 12 000 at 10 knots (surfaced)
Complement: 80

Transferred 24 October 1959 after modernisation at Pearl Harbor. Although due to be paid off in 1975 retained in service (see note under "S 30" class).

ALMIRANTE GARCÍA DE LOS REYES *1977, Royal Spanish Navy*

AIRCRAFT CARRIERS

1 NEW CONSTRUCTION

Name	No.	Builders	Laid down	Launched	Commissioned
(See note)	R 11	Bazán, Ferrol	8 Oct 1979	1981	1984

Displacement, tons: 14 700 full load
Dimensions, feet (metres): 639·9 × 79·4 × 29·8 *(195·1 × 24·2 × 9·1)*
Flight deck, feet (metres): 574 × 98·4 *(175 × 30)*
Aircraft: 19 (V/STOL and helicopters)
Guns: 4—Meroka 20 mm (12-barrels) CIWS.
Main engines: 2 LM2500 gas turbines; 40 000 shp; 1 shaft
Speed, knots: 25
Range, miles: 7 500 at 20 knots
Complement: 870 (including Air Group)

Basically to the US Navy Sea Control Ship design she was ordered on 29 June 1977. Associated US firms are Gibbs and Cox and Dixencast. The design has been offered to Argentina, Australia, France, India and Iran. Building of this ship is to take precedence over the "FFG 7" frigates in order to replace *Dédalo*. Second of class proposed for 1985.

Aircraft: Ski-jump to be fitted.

Cost: 25 000 million pesetas. US to provide $150 million.

Electronics: Digital command and control system.

Name: Probably *Dédalo* instead of original *Almirante Carrero Blanco*.

R 11 *1977*

Radar: Surface search: ?.
Three dimensional: SPS 52 B (to be converted to 52 C).
Fire control: Four VPS-2 for Meroka.
Air control: SPN 35 or similar.

1 Ex-US "INDEPENDENCE" CLASS (CVL)

Name	No.	Builders	Laid down	Launched	Commissioned
DÉDALO (ex-USS *Cabot*, AVT 3, ex-*CVL 28*, ex-*Wilmington*, CL 79)	R 01	New York Shipbuilding Corporation	16 Aug 1942	4 Apr 1943	24 July 1943

Displacement, tons: 13 000 standard; 16 416 full load
Dimensions, feet (metres): 623 × 71·5 (hull) × 26 *(189·9 × 21·8 × 7·9)*
Width, feet (metres): 109 *(33·2)*
Aircraft: 7 Harriers (5 AV-8A, 2 TAV-8A) (Matador)
20 helicopters (ASW/Sea Kings—Combat/Huey Cobras—Landings/specially embarked Bell 212s or 204s)
Guns: 26—40 mm/60 (2 quad, 9 twin Mk 2 and Mk 1)
Armour: 2 to 5 in sides; 2 to 3 in deck
Main engines: GE geared turbines; 4 shafts; 100 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 32
Range, miles: 7 200 at 15 knots
Oil fuel, tons: 1 800
Complement: 1 112 (without Air Groups)

Completed as an aircraft carrier from the hull of a "Cleveland" class cruiser. Originally carried over 40 aircraft. Converted with strengthened flight and hangar decks, large port side catapult, revised magazine arrangements, new electronic gear, with stability corrected to offset the added top-weight. Hangar capacity altered to take 20 aircraft. Flight deck: 545 × 108 ft *(166·1 × 32·9 m)*.
Reactivated and modernised at Philadelphia Naval Shipyard, where she was transferred to Spain on 30 August 1967, on loan for five years. Purchased December 1973. Fleet flagship.
Rerated "Portaaronaves" on 28 September 1976 with change of flag superior from PH to PA.

Aircraft: Hangar capacity—18 Sea Kings. Six more can be spotted on flight deck.

Electronics: WLR1 ECM; Tacan.

Radar: Three dimensional: SPS 8.
Air search: SPS 6 and SPS 40.
Tactical: SPS 10.
Fire control: Four sets.
Navigation: Two sets.

DÉDALO *1974, Michael D. J. Lennon*

DESTROYERS

2 "ROGER DE LAURIA" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched* (see *note*)	*Commissioned*
ROGER DE LAURIA	D 42	Bazán, Ferrol/Cartagena	4 Sep 1951	12 Nov 1958	30 May 1969
MARQUÈS DE LA ENSENADA	D 43	Bazán, Ferrol/Cartagena	4 Sep 1951	15 July 1959	10 Sep 1970

Displacement, tons: 3 012 standard; 3 785 full load
Dimensions, feet (metres): 391·5 × 42·7 × 18·4
(119·3 × 13 × 5·6)
Aircraft: 1 Hughes 369 HM ASW helicopter
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 2 triple Mk 32 tubes for Mk 44 A/S torpedoes
Torpedo tubes: 2—21 in *(533 mm)* fixed single Mk 25 tubes for Mk 37 torpedoes
Main engines: 2 Rateau-Bretagne geared turbines; 2 shafts; 60 000 shp
Boilers: Three 3-drum type
Speed, knots: 28
Oil fuel, tons: 700
Range, miles: 4 500 at 15 knots
Complement: 318 (20 officers, 298 men)

Ordered in 1948. Towed to Cartagena for reconstruction to a new design. *Roger de Lauria* was re-launched after being lengthened and widened on 29 August 1967 and *Marquès de la Ensenada* on 2 March 1968. Weapons and electronics identical to "Gearing Fram II".

Electronics: ESM; WLRI. Torpedo control; ? Mk 114.

Engineering: Problems with the boilers have arisen. D 43 to have refit of machinery.

Fire control: One Mk 37 director with Mk 25 radar.
One Mk 56 director with Mk 35 radar.

Gunnery: To be fitted with Meroka 20 mm system.

Missiles: Recent modernisation has made provision for fitting SAM missiles.

Radar: Search: SPS 40.
Tactical: SPS 10.
Navigation: Decca RM 426.

Sonar: One hull-mounted, SQS 32C; one VDS, SQA 10.

MARQUÈS DE LA ENSENADA *1976, Royal Spanish Navy*

5 Ex-US "GEARING (FRAM I)" (D 60) CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
CHURRUCA (ex-USS *Eugene A. Greene,* DD 711)	D 61	Federal S.B. & D.D. Co	1944	18 Mar 1945	8 June 1945
GRAVINA (ex-USS *Furse,* DD 882)	D 62	Consolidated Steel Corporation	1944	9 Mar 1945	10 July 1945
MENDEZ NUÑEZ (ex-USS *O'Hare,* DD 889)	D 63	Consolidated Steel Corporation	1945	22 June 1945	29 Nov 1945
LANGARA (ex-USS *Leary,* DD 879)	D 64	Consolidated Steel Corporation	1944	20 Jan 1945	7 May 1945
BLAS DE LEZO (ex-USS *Noa,* DD 841)	D 65	Bath Iron Works	1945	30 July 1945	2 Nov 1945

Displacement, tons: 2 425 standard; 3 480 full load
Dimensions, feet (metres): 390·5 × 40·9 × 19
(119 × 12·4 × 5·8)
Aircraft: 1 Hughes 500 helicopter
Guns: 4—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 1 Asroc launcher; 2 triple Mk 32 tubes
Main engines: 2 geared turbines (GE or Westinghouse) 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Fuel, tons: 650
Range, miles: 4 800 at 15 knots (economical)
Complement: 274 (17 officers, 257 ratings)

Appearance: *Blas de Lezo* has two forward gun mounts and torpedo tubes by after funnel.

Electronics: ESM; WLRI.

Fire control: Radar directed Mk 37 Director.

Radar: Air search: D61 and 62, SPS 40—remainder, SPS 37.
Surface search: SPS 10.
Navigation: One set.

Refits: The first pair were refitted at El Ferrol on transfer. The remainder arrived at El Ferrol on 23 July 1974 after refit in the USA.

Sonar: SQS 23 (hull-mounted).

Torpedo control: ? Mk 114.

Transfers: D61 and 62—31 Aug 1972; D63-65—31 Oct 1973. (All finally purchased 17 May 1978.)

LANGARA *1975, Spanish Navy*

4 Ex-US "FLETCHER" (D 20) CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
LEPANTO (ex-USS *Capps*, DD 550)	D 21	Gulf S.B. Corporation, Chickasaw, Ala	12 June 1941	31 May 1942	23 June 1943
ALMIRANTE VALDES (ex-USS *Converse*, DD 509)	D 23	Bath Iron Works	23 Feb 1942	30 Aug 1942	8 June 1943
ALCALA GALIANO (ex-USS *Jarvis*, DD 799)	D 24	Todd Pacific Shipyards	7 June 1943	14 Feb 1944	3 June 1944
JORGE JUAN (ex-USS *McGowan*, DD 678)	D 25	Federal S.B. & D.D. Co	May 1943	14 Nov 1943	20 Dec 1943

Displacement, tons: 2 080 standard; 2 750 normal; 3 050 full load
Dimensions, feet (metres): 376·5 × 41·2 × 18 *(114·8 × 12·6 × 5·5)*
Guns: D21: 5—5 in *(127 mm)*/38 (single Mk 30); Others: 4—5 in *(127 mm)* single
D21: 6—40 mm/60 (twin Mk 1); 6—20 mm/70 (single Mk 4); Others: 6—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes; 2 Mk 11 Hedgehogs; 6 DCTs in D21, 4 in D23; 2 DC racks in D21, 1 in others
Torpedo tubes: 3—21 in *(533 mm)* in D23, 24 and 25 only
Main engines: Geared turbines; (Westinghouse in D21, GE in others); 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 35
Oil fuel, tons: 506
Range, miles: 5 000 at 15 knots
Complement: 290 (17 officers, 273 men)

Lepanto was reconditioned at San Francisco, California, and there turned over to the Spanish Navy on 15 May 1957, sailing for Spain on 1 July 1957. *Valdes* was transferred at Philadelphia on 1 July 1959, *Jorge Juan* was transferred at Barcelona on 1 December 1960 and *Alcala Galiano* at Philadelphia on 3 November 1960, both being of the later "Fletcher" class. Modernisation of A/S equipment is planned. All purchased from the USA on 1 October 1972. *Lepanto* damaged on grounding 16 April 1977.

Electronics: Torpedo director Mk 5. A/S director Mk 105.

Fire control: Radar controlled Mk 37 directors; Mk 56 director with Mk 35 radar (D 23, 24 and 25); two Mk 63 directors with SPG 34 radar for 3-in *(76 mm)* guns (D 23, 24 and 25).

Radar: Search: SPS 6C.
Tactical: SPS 10.

Sonar: One hull-mounted set; SQS 29 or SQS 4.
Countermeasures: BLR-1 (D 23, 24 and 25).

ALMIRANTE VALDES *1974, Wright and Logan*

ALCALA GALIANO *1977, X. I. Taibo*

FRIGATES

0 + 3 US "FFG 7" CLASS (NEW CONSTRUCTION)

Name	No.	Builders	Laid down	Launched	Commissioned
NAVARRA (?)	F 81	Bazán, Ferrol	—	—	mid-1984
MURCIA (?)	F 82	Bazán, Ferrol	—	—	1984-85
LEON (?)	F 83	Bazán, Ferrol	—	—	mid-1985

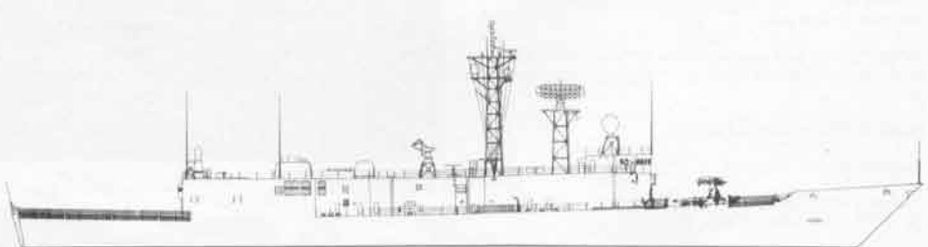
Displacement, tons: 3 605 full load
Dimensions, feet (metres): 445 × 45 × 24·5 *(135·6 × 13·7 × 7·5)*
Aircraft: 2 helicopters
Missiles: SSM/SAM; 16 Harpoon/24 Standard (Mk 13 Mod 4)
Guns: 1—76 mm/62 (single Mk 75); 1—Meroka system
A/S weapons: 2 triple torpedo tubes (Mk 32)
Main engines: 2—LM 2500 gas turbines (General Electric); 41 000 shp; 1 shaft (cp propeller)
Speed, knots: 30
Range, miles: 4 500 at 20 knots
Complement: 163 (11 officers, 152 ratings)

Three ordered 29 June 1977.
The execution of this programme has been delayed due to the emphasis placed on the carrier replacement and the fact that Mk 13 launchers (ordered in 1978) will not be available until end 1982.

Financial: US support of $400 million for the three ships.

Missiles: Harpoons may be mounted on upper deck.

Sonar: DE 1160B or SQS 56 with TACTAS.



"FFG 7" Class *Drawing, A. D. Baker III*

5 + 3 "F 30" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
DESCUBIERTA	F 31	Bazán, Cartagena	16 Nov 1973	8 July 1975	18 Nov 1978
DIANA	F 32	Bazán, Cartagena	8 July 1975	26 Jan 1976	30 June 1979
INFANTA ELENA	F 33	Bazán, Cartagena	26 Jan 1976	14 Sep 1976	1979
INFANTA CRISTINA	F 34	Bazán, Cartagena	14 Sep 1976	25 Apr 1977	Feb 1980
CAZADORA	F 35	Bazán, Ferrol	14 Dec 1977	17 Oct 1978	Apr 1981
VENCEDORA	F 36	Bazán, Ferrol	1 May 1978	27 Apr 1979	Sep 1981
CENTINELA	F 37	Bazán, Ferrol	31 Oct 1978	6 Oct 1979	Dec 1981
SERVIOLA	F 38	Bazán, Ferrol	28 Feb 1979	Jan 1980	May 1982

Displacement, tons: 1 233 standard; 1 479 full load
Dimensions, feet (metres): 291·3 × 34 × 11·1 *(88·8 × 10·4 × 3·2)*
Missiles: SSM; 8 Harpoon (two 4-cell launchers);
1 Octuple Sea Sparrow mounting (16 reloads) (see note)
Guns: 1—3 in *(76 mm)*/62 OTO Melara;
1—40 mm/70 Breda-Bofors;
1 Meroka 20 mm/120 (12-barrels non-rotating)
A/S weapons: 1—375 mm Bofors twin-barrelled rocket launcher; 6 (2 triple) Mk 32 for Mk 46 torpedoes
Main engines: 4 MTU-Bazán 16V956 "TB 91" diesels; 16 000 bhp (18 000 bhp supercharged for 2 hours); 2 shafts; cp propellers
Speed, knots: 25·5
Range, miles: 4 000 at 18 knots
Complement: 116; (plus 30 Marine detachment)

Similar to the Portuguese "Improved João Coutinho" class built by Bazán with modifications to the armament and main engines. Officially rated as corvettes. *Diana* (tenth of the name) originates with the galley *Diana* of 1570. Infanta Elena and Cristina are the daughters of King Juan Carlos. Approval for second four ships given on 21 May 1976. First four ordered 7 December 1973 (83 per cent Spanish ship construction components) and four more from Bazán, Ferrol on 25 May 1976. An improved version is under design of 1 879 tons full load, 10 m longer and with gas turbines giving a speed exceeding 30 knots. These ships to be fitted with similar weapons and equipment but with a helicopter and hangar.

Appearance: Altered from original design by use of Y-shaped funnel.

Cost: 2 500 million pesetas for first four. 3 750 million pesetas for second four.

Design: Original Portuguese "João Coutinho" design by Comodoro de Oliveira PN developed by Blohm and Voss and considerably modified by Bazán.

Electrical: 1 700 kVA four diesel alternators with Bazán-MAN RBV 16 TLS of 520 hp and emergency gas turbine alternator of 450 kVA. Normal cruising load from two alternators (one engine room); action state requiring three. Additional power available for modernisation.

Electronics: ECM Elettronica SpA "Beta".

Engineering: Fully automatic computerised engine and alternator control; two independent engine rooms; normal running on two diesels.

DESCUBIERTA *9/1980, Michael D. J. Lennon*

Gunnery: 144 ready rounds for 40 mm. Secondary optical director, DME ("CSEE"). The 40 mm will make way for a 12-barrelled Meroka 20 mm CIWS.

Missiles: Selenia system (Albatros) for Sea Sparrow. This is built partly in Spain. Harpoon with two 4-cell launchers between bridge and funnel.

Radar: Air/surface search: HSA DA 05/2.
Navigation and helicopter control: HSA ZW-06.
Fire control: HSA WM 22/41 system or WM 25.

Sonar: Raytheon 1160B (hull-mounted);
Raytheon 1167 (VDS) (initially only in F 35-38).

Sound reduction: Masker fitted to shafts; propellers (five tested) under trial for four years; auxiliary gas turbine generator fitted on upper deck for use during passive sonar search; all main and auxiliary diesels sound-mounted.

Stabilisers: Fitted.

1 "AUDAZ" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
INTRÉPIDO	D 38	Bazán, Ferrol	14 July 1945	15 Feb 1961	25 Mar 1965

Displacement, tons: 1 227 standard; 1 550 full load
Dimensions, feet (metres): 308·2 × 30·5 × 17·1 *(94 × 9·3 × 5·2)*
Guns: 2—3 in *(76 mm)*/50 (twin Mk 34);
2—40 mm/70 (twin SP 48)
A/S weapons: 2 Mk 11 Hedgehogs; 8 mortars; 2 DC racks; 2 side launching racks for Mk 32 A/S torpedoes (6 torpedoes)
Main engines: 2 Rateau-Bretagne geared turbines; 2 shafts; 28 000 shp (32 500 max)
Boilers: 3 La Seine 3-drum type
Speed, knots: 28
Oil fuel, tons: 290
Range, miles: 3 800 at 14 knots
Complement: 199 (13 officers, 186 men)

Survivor of class of nine based on the pre-war French "Le Fier" design. The long delay between laying down and launch due to a complete re-design. Allocated D Pennant number in 1961. Used as training ship for artificers at Ferrol.

Engineering: The boilers are in two compartments separated by the engine rooms.

Radar: Surface search, SPS 5B.
Air search: MLA-1B.
Fire control: One Mk 63.

Sonar: One QHBa hull-mounted set.

INTRÉPIDO *1969, Spanish Navy*

5 "BALEARES" (F 70) CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BALEARES	F 71	Bazán, Ferrol	31 Oct 1968	20 Aug 1970	24 Sep 1973
ANDALUCIA	F 72	Bazán, Ferrol	2 July 1969	30 Mar 1971	23 May 1974
CATALUÑA	F 73	Bazán, Ferrol	20 Aug 1970	3 Nov 1971	16 Jan 1975
ASTURIAS	F 74	Bazán, Ferrol	30 Mar 1971	13 May 1972	2 Dec 1975
EXTREMADURA	F 75	Bazán, Ferrol	3 Nov 1971	21 Nov 1972	10 Nov 1976

Displacement, tons: 3 015 standard; 4 177 full load
Dimensions, feet (metres): 438 × 46·9 × 15·4 *(133·6 × 14·3 × 4·7)*
Missiles: SAM; 16 Tartar/Standard missiles (lightweight Mk 22 launcher)
Gun: 1—5 in *(127 mm)*/54 (single Mk 42)
A/S weapons: 1 8-tube ASROC launcher (8 reloads); 4 Mk 32 for Mk 46 torpedoes; 2 Mk 25 for Mk 37 torpedoes (stern)
Main engines: 1 set Westinghouse geared turbines; 1 shaft; 35 000 shp
Boilers: 2 high pressure V2M type; 1 200 psi *(84·4 kg/cm²)*
Speed, knots: 28
Range: 4 500 miles at 20 knots
Complement: 256 (15 officers, 241 men)

This class resulted from a very close co-operation between Spain and the USA. Programme approved 17 November 1964, technical support agreement with USA being signed 31 March 1966. US Navy supplied weapons and sensors. Major hull sections, turbines and gearboxes made at El Ferrol, superstructures at Alicante, boilers, distilling plants and propellers at Cadiz.

Cost: Approximately 4 000 million pesetas.

Design: This class replaced the "Leander" class from the UK which order was cancelled in 1962. Generally similar to US Navy's "Knox" class although they differ in the missile system, hull sonar, Mk 25 torpedo tubes and lack of helicopter facilities. The last is a cause of criticism along with similar criticisms in US Navy of low speed, lack of manoeuvrability (one screw) and inadequate missile stowage.
The anchor arrangement provides for a 2 ton anchor on the port bow and a 4 ton anchor in the keel aft of the sonar dome.

Electronics: WLR-1 to be replaced by Elsag ESM.

BALEARES *7/1980, Wright and Logan*

Fire control: Mk 68 GFCS with SPG 53B radar for guns and missiles; Mk 74 missile control system integrating Mk 73 missile control director and SPG 51C radar. Mk 111 replaced by digital control Mk 152 calculator. Mk 114 torpedo control system.

Gunnery: 600 5-in rounds carried. Meroka system due to be shipped.

Missile system: Mk 22 launcher with stowage for 16 missiles. Single director with two lines of fire against different targets with Mk 68 GFCS. To receive SSMs—believed four or eight Harpoon per ship.

Modernisation: Agreement with US Navy for improvements to bring them to same standard as "Knox" class.

Radar: Search: SPS 52A (3D).
Tactical: SPS 10.
Fire control: SPG 51C continuous wave for missiles; Mk 68 with SPG 53B for guns with continuous wave injection for limited use with missiles.
Navigation: Raytheon Marine Pathfinder.

Sonar: SQS 23 bow mounted; SQS 35V VDS below quarterdeck.

Tacan: SRN-15A.

Torpedoes and tubes: All are fitted fixed internally the Mk 32 being angled at 45 degrees. Total of 41 torpedoes carried.

1 "ALAVA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
LINIERS	D 51 (ex-21)	Bazán, Cartagena	1 Jan 1945	1 May 1946	27 Jan 1951

Displacement, tons: 1 842 standard; 2 287 full load
Dimensions, feet (metres): 336·3 × 31·5 × 19·7 *(102·5 × 9·6 × 6)*
Guns: 3—3 in *(76 mm)*/50 (single Mk 34); 3—40 mm/70 (single SP 48)
A/S weapons: 2 Hedgehogs; 8 DC mortars; 2 DC racks; 2 side launching racks for A/S torpedoes (6 torpedoes)
Main engines: Parsons geared turbines; 2 shafts; 31 500 shp
Boilers: 4 Yarrow 3-drum type
Speed, knots: 29
Oil fuel, tons: 370
Range, miles: 4 100 at 15 knots
Complement: 222 (15 officers, 207 men)

Ordered in 1936, but construction was held up by the Civil War. After being resumed, was again suspended in 1940, but restarted at Empresa Nacional Bazán. The last of the old "Churruca" class of which 18 were built.
Mid-life conversion in 1962 changed the armament from conventional destroyer outfit. Used for midshipmens' training.

Fire control: Mk 63 FCS with Mk 34 radar.

"ALAVA" Class *1974, Spanish Navy*

Radar: Air search: MLA 1B.
Surface search: SG-6B.
Navigation: Decca TM 626.

Sonar: One SQS 30A hull-mounted set.

1 MODERNISED "PIZARRO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
VICENTE YÁÑEZ PINZON	PA 41	Bazán, Ferrol	Sep 1943	8 Aug 1945	5 Aug 1949

Displacement, tons: 1 924 standard; 2 228 full load
Dimensions, feet (metres): 312·5 × 39·5 × 17·7 *(95·3 × 12 × 5·4)*
Guns: 2—5 in *(127 mm)*/38 (twin Mk 30); 4—40 mm/70 (twin SP 48)
A/S weapons: 2 Hedgehogs; 8 mortars; 2 DC racks; 2 side launching racks for A/S torpedoes (6 torpedoes)
Main engines: 2 sets Parsons geared turbines; 2 shafts; 6 000 shp
Boilers: 2 Yarrow type
Speed, knots: 18·5
Range, miles: 3 000 at 15 knots
Oil fuel, tons: 390
Complement: 255 (16 officers, 239 men)

Survivor of a class of eight.
Originally designed to carry 30 mines.

Fire control: GFCS Mk 52 with Mk 29 radar on one director.

Modernisation: Completed 25 March 1960.

Radar: Surface search: SPS 5B.
Air search: MLA-1B.
Navigation: Decca TM 626.

VICENTE YÁÑEZ PINZON *1974, Spanish Navy*

4 "ATREVIDA" (F 60) CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ATREVIDA	PA 61	Bazán, Cartagena	26 June 1950	2 Dec 1952	19 Aug 1954
PRINCESA	PA 62	Bazán, Cartagena	18 Mar 1953	31 Mar 1956	2 Oct 1957
NAUTILUS	PA 64	Bazán, Cádiz	27 July 1953	23 Aug 1956	10 Dec 1959
VILLA DE BILBAO	PA 65	Bazán, Cádiz	18 Mar 1953	19 Feb 1958	2 Sep 1960

Displacement, tons: 1 031 standard; 1 135 full load
Dimensions, feet (metres): 247·8 × 33·5 × 9·8 *(75·5 × 10·2 × 3)*
Guns: 1—3 in *(76 mm)*/50 (Mk 22); 3—40 mm/70 (SP 48)
A/S weapons: 2 Hedgehogs; 8 mortars; 2 DC racks
Mines: 20 can be carried
Main engines: Sulzer diesels; 2 shafts; 3 000 bhp
Speed, knots: 18·5
Oil fuel, tons: 105
Range, miles: 8 000 at 10 knots
Complement: 132 (9 officers, 123 men)

Survivors of a class of six.
All have been modernised, PA 61 in 1959-60, remainder while building. No funnel, the diesel exhaust being on the starboard side waterline. Allocated F pennant numbers in 1961 although still officially classed as corvettes. PA numbers allocated 1980.

Aircraft: Although no deck is fitted helicopters can be refuelled in flight.

Radar: Modified SPS 5B combined air/surface search.

PRINCESA (old number) *X. I. Taibo*

Refits: All refitted 1979. Modernisation of engines and upperworks to maintain them in service for offshore patrol and fishery protection.

Sonar: One QHBa.

LIGHT FORCES

Note: Two fishery protection vessels at 500 million pesetas each are to be built but it is uncertain whether these will be naval manned.

6 "LAZAGA" CLASS (FAST ATTACK CRAFT—PATROL)

Name	No.	Builders	Commissioned
LAZAGA	PC 01	Lürssen, Vegesack	16 July 1975
ALSEDO	PC 02	Bazán, La Carraca	28 Feb 1977
CADARSO	PC 03	Bazán, La Carraca	10 July 1976
VILLAMIL	PC 04	Bazán, La Carraca	26 Apr 1977
BONIFAZ	PC 05	Bazán, La Carraca	11 July 1977
RECALDE	PC 06	Bazán, La Carraca	17 Dec 1977

Displacement, tons: 275 standard; 399 full load
Dimensions, feet (metres): 190·6 × 24·9 × 8·5 *(58·1 × 7·6 × 2·6)*
Guns: 1—3 in *(76 mm)*/62 (Compact); 1—40 mm/70 Breda-Bofors 350P;
2—20 mm Oerlikon GK 204 (in some cases original 76 mm L50 Mk 22 has been retained eg. *Cadarso*)
A/S weapons: Provision for 2 triple Mk 32 torpedo tube mountings and DC racks
Main engines: 2 MTU-Bazán MA15 TB91 diesels; 8 000 bhp
Speed, knots: 30
Range, miles: 6 100 at 17 knots
Complement: 34 (4 officers, 30 ratings)

Ordered in 1972, primarily for Fishery Protection duties. Although all are operated by the Navy half the cost is being borne by the Ministry of Commerce. Of similar hull form to Israeli "Reshef" class and to "S-143" class of Federal Germany and of basic Lürssen Type 57 design but with only two engines.
Lazaga was steamed to Spain in April 1975 for equipping and arming.

A/S weapons: Fitted in at least one craft.

Building dates: *Lazaga;* May 1974 (laid down), 10 October 1974 (launched). *Alsedo;* 10 May 1974, 8 January 1975. *Cadarso;* 24 May 1974, 8 January 1975. *Villamil* and *Bonifaz;* 8 January 1975, 24 May 1975. *Recalde;* 24 May 1975, 9 November 1975.

Cost: 910 231 000 pesetas fully fitted.

Electronics: ECM and IFF.

Fire control: Optical director CSEE (HSM Mk 22).

Gunnery: All guns assembled under licence by Bazán.

Missiles: To receive twin or quad Harpoon by about 1981, without change of gun armament.

Radar: Surface search and target indication: HSA-WM-22.
Navigation: Decca TM626.

Sonar: One hull-mounted set (?ELAC).

Note: A modified version of this class, "Cormoran" of 59·3 × 7·5 × 1·9 metres, 355 tons full load, 36 knots, 2 500 miles at 15 knots with four Exocet, one 76/62 OTO Melara, one 40/70 mm gun, three MTU diesels, 13 500 hp, M-20 series radar and CSEE secondary director is under discussion with foreign purchasers and has been bought by Morocco (see Moroccan section).

LAZAGA *1979, Royal Spanish Navy*

6 "BARCELO" CLASS (FAST ATTACK CRAFT—PATROL)

Name	No.	Builders	Commissioned
BARCELÓ	PC 11	Lürssen, Vegesack	20 Mar 1976
LAYA	PC 12	Bazán, La Carraca	23 Dec 1976
JAVIER QUIROGA	PC 13	Bazán, La Carraca	4 Apr 1977
ORDÓÑEZ	PC 14	Bazán, La Carraca	7 June 1977
ACEVEDO	PC 15	Bazán, La Carraca	14 July 1977
CÁNDIDO PÉREZ	PC 16	Bazán, La Carraca	25 Nov 1977

Displacement, tons: 134 full load
Dimensions, feet (metres): 118·7 × 19 × 6·2 *(36·2 × 5·8 × 1·9)*
Guns: 1—40 mm Breda Bofors 350; 2—20 mm Oerlikon GAM 204; 2—12·7 mm
Torpedo tubes: Provision for 2—21 in *(533 mm)*
Main engines: 2 MTU-Bazán MD-16V TB 90 diesels; 5 760 bhp; 2 shafts
Speed, knots: 36; 20 cruising
Range, miles: 1 200 at 17 knots
Complement: 19

Ordered 5 December 1973, the prototype, *Barceló,* being built by Lürssen, Vegesack with MTU engines. All manned by the Navy although the cost is being borne by the Ministry of Commerce. Cost 610 million pesetas (1976) per craft. Of Lürssen TNC 36 design.

Building dates: *Barceló;* 3 March 1975 (laid down), November 1975 (launched). *Laya, J. Quiroga;* 9 May 1975, 18 December 1975. *Ordóñez, Acevedo;* 9 February 1976, 10 September 1976. *C. Pérez;* 3 March 1977 (launched).

Fire control: CSEE optical director for 40 mm.

Missiles: Reported as able to take two or four surface-to-surface missiles instead of 20 mm gun and torpedo tubes.

BARCELÓ *3/1976, E. N. Bazán*

6 + 4 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
ANAGA	PVZ 21	Bazán, Cádiz	1980
TOGOMAGO	PVZ 22	Bazán, Cádiz	1980
MAROLA	PVZ 23	Bazán, Cádiz	1980
MOURO	PVZ 24	Bazán, Cádiz	1981
GROSA	PVZ 25	Bazán, Cádiz	1981
MEDAS	PVZ 26	Bazán, Cádiz	1981
IZARO	PVZ 27	Bazán, Cádiz	1981
TABARCA	PVZ 28	Bazán, Cádiz	1982
DEVA	PVZ 29	Bazán, Cádiz	1982
BERGANTÍN	PVZ 210	Bazán, Cádiz	1982

Displacement, tons: 296·5 tons
Dimensions, feet (metres): 145·6 × 21·6 × 8·2 *(44·4 × 6·6 × 2·5)*
Guns: 1—76 mm Mk 22; 1—20 mm Mk 10
Main engine: 1 MTU diesel; 4 300 hp = 20 knots
Range, miles: 4 000 at 13 knots
Complement: 25 (3 officers, 22 ratings)

Ordered from Bazán, Cádiz on 22 July 1978. For fishery and EEZ patrol duties.
Designed to release "Lazaga" class for other operations. Cost 360 million pesetas each.
Rescue and fire-fighting capability.

2 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
NÉCORA	PVZ 71	Maritime del Musel, Gijon	1962
PERCEBE	PVZ 72	Maritime del Musel, Gijon	1962

Measurement, tons: 194
Dimensions, feet (metres): 102·9 × 21·1 × — *(31·4 × 6·5 × —)*
Main engine: 1—6 cyl diesel; 550 hp = 12·7 knots
Fuel, tons: 65

Built as trawlers. Purchased in 1979—commissioned in navy 5 February 1979. Based in Canary Islands.

1 FISHERY PROTECTION VESSEL

SALVORA (ex-*Virgen de la Almudena*, ex-*Mendi Eder*) PVZ 11

Displacement, tons: 180 standard; 275 full load
Dimensions, feet (metres): 107 × 20·5 × 8·2 *(31 × 6·1 × 2·5)*
Gun: 1—20 mm Mk 4/70
Main engine: 1 Sulzer diesel; 1 shaft; 400 bhp = 12 knots
Oil fuel, tons: 25
Complement: 31

Trawler. Built in 1948 by SA Juliana, Gijon. Commissioned 25 September 1954.

Radar: Decca RM 914.

3 USCG TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	PAS 11 (ex-*LAS 1*, ex-*LAS 10*)	Bazán, Cartagena	26 Apr 1965
—	PAS 12 (ex-*LAS 2*, ex-*LAS 20*)	Bazán, Cartagena	4 May 1965
—	PAS 13 (ex-*LAS 3*, ex-*LAS 30*)	Bazán, Cartagena	3 Sep 1965

Displacement, tons: 49 standard; 63 full load
Dimensions, feet (metres): 83·3 × 16·1 × 6·6 *(25·4 × 4·9 × 2)*
Guns: 1—20 mm; 2—7 mm (single)
A/S weapons: 2 Mousetrap Mk 20 (4 rockets each)
Main engines: 800 bhp; 2 shafts = 15 knots
Complement: 15

Of wooden hull construction. All launched 1964.

Radar: Decca 978.

Sonar: QCU 2 or QHB.

20 "PVC 11" CLASS (COASTAL PATROL CRAFT)

PVC 11-19, PVC 110-120

Displacement, tons: 18·5 standard; 21·2 full load
Dimensions, feet (metres): 52·2 × 14·4 × 4·3 *(15·9 × 4·4 × 1·3)*
Gun: 1—12·7 mm MG
Main engines: 2 Baudoin-Interdiesel DNP-350; 768 hp = 25·7 knots
Range, miles: 430 at 18 knots
Complement: 5

Ordered under the programme agreed 13 May 1977, funded jointly by the navy and the Ministry of Commerce. Built to the Aresa 15 PT 37 design by Aresa, Arenys de Mar, Barcelona. GRP hull and Decca 110 radar. Cost approximately 22 million pesetas each (1977 prices). Naval manned. PVC 11 carried out trials in July 1978. All completed by early 1980.

PVC 11 (old number) *1979, Royal Spanish Navy*

2 COASTAL PATROL CRAFT

PVC 21 (ex-V 33) **PVC 31** (ex-V 34)

Displacement, tons: 25
Gun: 1 MG
Speed, knots: 25

Similar but not identical craft built in 1977; ex-V 33 by Viudes, Barcelona and ex-V 34 by Aresa, Barcelona. Ex-V 33 has a Decca 110 radar. Ex-V 34 was prototype for "PVC 11" class.

4 "PVZ 31" CLASS (COASTAL PATROL CRAFT)

PVZ 31-34

Displacement, tons: 85
Dimensions, feet (metres): 106·6 × 15·7 × 4·6 *(32·2 × 4·8 × 1·4)*
Guns: 2—20 mm Mk 10
Main engines: 2 diesels, 2 800 hp = 25 knots
Range, miles: 1 200 at 15 knots
Complement: 12

A class of 85 ton craft ordered in 1978 under the programme of 13 May 1977, funded jointly by the navy and the Ministry of Commerce. Cost approximately 130 million pesetas each. All completed 1980-81 by Bazán, Ferrol. Naval manned. Aluminium hull. PVZ 31 and 32 laid down 20 December 1979.

5 "PVI 21" CLASS (COASTAL PATROL CRAFT)

PVI 21-25

Displacement, tons: 17·2 standard; 25 full load
Dimensions, feet (metres): 46 × 15·4 × 3·3 *(14 × 4·7 × 1)*
Guns: 2—7·62 mm (twin)
Main engines: 2 Gray Marine diesels; 450 hp = 13 knots
Complement: 8

Laid down 1964 by Bazán, La Carraca. Wooden hulled. Originally LPI-1 etc. All completed February-March 1965.

PVI 23 (old number) *1965, Spanish Navy*

1 PATROL VESSEL

RR 29

Displacement, tons: 364 standard; 498 full load
Dimensions, feet (metres): 124·6 × 27·6 × 9·8 *(38 × 8·4 × 3)*
Guns: 1—1·5 in/85; 1—20 mm
Main engine: Triple expansion; 1 shaft; 800 ihp = 10 knots
Boiler: 1 cylindrical, *(13 kg/cm)*
Fuel, tons: 100 coal
Range, miles: 620 at 10 knots

Former tug launched in 1941. To be retired soon in wake of sisters RR 19-20.

Radar: DK 12.

6 COASTAL/RIVER PATROL LAUNCHES

Name	*No.*	*Builders*	*Commissioned*
—	V 1	Kiel, West Germany	1926
ALCATRAZ	PVC 01	Egaña, Motrico	10 Apr 1947
—	V 5	Arsenal, Cartagena	13 June 1969
—	V 6 (ex-*V 22*)	—	—
CABO FRADERA	PVI 01	Bazán, La Carraca	25 Feb 1963
GAVIOTA	PVZ 61	West Germany	1944

Gaviota PVZ 61, 104·2 tons standard, 27·5 × 5·2 × 2 metres, two machine guns, complement 14, ex-smuggler, commissioned in Spanish Navy 26 November 1970; V 1 (ex-*Azor*) 112 tons, 31·1 × 5·7 × 2·1 metres, complement 16, yacht employed by Naval School, Marin; *Alcatraz* PVC 01, 65 tons, 19 × 4·6 × 2·1 metres, speed 8 knots, complement 13; V 5, 5 tons, 8·2 × 2·9 × 1 metres, 5 knots, complement 7; V 6 (ex-V 22), 42 tons standard, 22 × 4·8 × 1·6 metres, 19 knots, complement 7; *Cabo Fradera*, 28 tons, one 7·62 mm machine gun, based at Tuy on River Miño for border patrol with Portugal.
All craft except *Cabo Fradera* are probably to be deleted in near future when relieved by new construction.

CABO FRADERA *1976, Royal Spanish Navy*

30 "PVI 11" CLASS (INSHORE PATROL CRAFT)

PVI 11-19, PVI 110-130

Displacement, tons: 4·2 full load
Dimensions, feet (metres): 29·2 × 10·2 × 2·3 *(8·9 × 3·1 × 0·7)*
Gun: 1 MG
Main engines: 2 diesels; 240 hp = 18 knots
Range, miles: 120
Complement: 4

A class ordered from Rodman, Vigo under the programme agreed 13 May 1977, funded jointly by the navy and the Ministry of Commerce. Cost approximately 3 million pesetas each. PVI 11 commissioned 4 September 1978. All completed 1978-79. Naval manned GRP hull.

Radar: Decca 60 for ten craft based in northern ports.

AMPHIBIOUS FORCES

Note: Attack Transport ex-*Aragón* TA 11 and Attack Cargo Ship ex-*Castilla* TA 21 now in reserve unnamed.

2 Ex-US "PAUL REVERE" CLASS

Name	*No.*	*Builders*	*Commissioned*
CASTILLA (ex-*Diamond Mariner*, ex-USS *Paul Revere* LPA 248)	L 21 (ex-TA 12)	New York Shipbuilding Corp	3 Sep 1958
ARAGÓN (ex-*Prairie Mariner*, ex-USS *Francis Marion* LPA 249)	L 22	New York Shipbuilding Corp	6 July 1961

Displacement, tons: 10 709 light; 16 838 full load
Dimensions, feet (metres): 563·5 × 76 × 27 *(171·75 × 23·1 × 8·2)*
Guns: 8—3 in *76 mm*/50 (twins)
Main engines: General Electric geared turbines; 22 000 shp; 1 shaft = 21 knots
Boilers: 2 Foster Wheeler
Complement: 414 (35 officers, 379 ratings)
Troops: 1 657

Originally C4-S-1 cargo vessels converted to APAs. L 21 by Todd Shipyard, San Pedro and L 22 by Bethlehem, Baltimore. Designated LPAs in 1969. Fitted as force flagships.

Transfers: *Castilla* 17 January 1980 by sale. *Aragón* 11 July 1980 by sale.

ARAGÓN (as *Francis Marion*) *10/1978, Leo van Ginderen*

1 Ex-US "CABILDO" CLASS (LSD)

Name	*No.*	*Builders*	*Commissioned*
GALICIA (ex-USS *San Marcos*, LSD 25)	L 31	Philadelphia Navy Yard	15 Apr 1945

Displacement, tons: 4 790 standard; 9 375 full load
Dimensions, feet (metres): 475·4 × 76·2 × 18 *(139 × 23·2 × 4·9)*
Guns: 12—40 mm/60 (2 quad, 2 twin) (see note)
Main engines: Geared turbines; 2 shafts; 7 000 shp = 15·4 knots
Boilers: Two 3-drum cylindrical
Oil fuel, tons: 1 727
Range, miles: 8 000 at 15 knots
Complement: 301 (18 officers, 283 men)

Transferred to Spain on 1 July 1971 and by sale August 1974. Fitted with helicopter platform. Can carry three LCUs or 18 LCMs, 1 347 tons of cargo or 100—2·5-ton trucks or 27—M 48 tanks or 11 heavy helicopters. Accommodation for 137 troops (overnight) or 500 for short haul.

Fire control: GFCS with Mk 51 radar.

Guns: It is reported that the two twin 40 mm are being replaced by two ex-destroyer single 3-in *(76 mm)* guns.

Radar: Surface search: SPS 10.
Navigation: One set.

GALICIA *1975, Spanish Navy*

3 Ex-US "TERREBONNE PARISH" CLASS (LSTs)

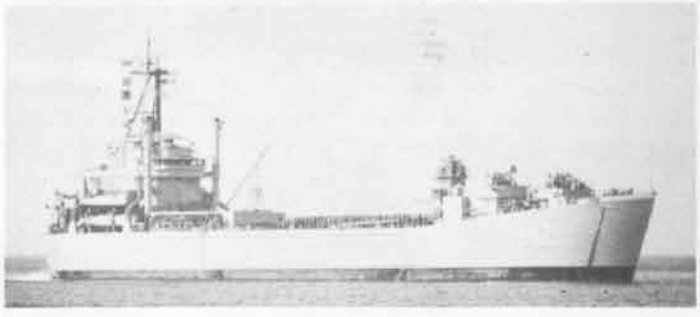
Name	*No.*	*Builders*	*Commissioned*
VELASCO (ex-USS *Terrebonne Parish*, LST 1156)	L 11	Bath Iron Works	21 Nov 1952
MARTIN ALVAREZ (ex-USS *Wexford County*, LST 1168)	L 12	Christy Corporation	15 June 1954
CONDE DE VENADITO (ex-USS *Tom Green County*, LST 1159)	L 13	Bath Iron Works	12 Sep 1953

Displacement, tons: 2 590 standard; 5 800 full load
Dimensions, feet (metres): 384 × 55 × 17 *(117·1 × 16·8 × 5·2)*
Guns: 6—3 in/50 (3 twin, 2 fwd, 1 aft)
Main engines: 4 General Motors diesels; 2 shafts; 6 000 bhp = 15 knots
Range, miles: 15 000 at 9 knots
Complement: 116 (troops 395)

LST 1156 and 1168 transferred on 29 October 1971, LST 1159 on 5 January 1972. Can carry 395 men, ten M 48 tanks or 17 LVTPs. Four landing craft. Purchase approved 5 August 1976, transferred 1 November 1976 and purchased on 17 May 1978.

Fire control: 2 Mk 63 GFCS with SPG 34 radar.

Radar: Surface search: SPS 10.
Navigation: One set.



MARTIN ALVAREZ *5/1976, P. Crichton*

1 Ex-BRITISH LCT 4

BDK 2 (ex-*Morsa*) LCT 2 (ex-K 2)

Displacement, tons: 440 standard; 868 full load
Dimensions, feet (metres): 185·3 × 38·7 × 6·2 *(56·5 × 11·8 × 1·9)*
Guns: 2—20 mm (single)
Main engines: 2 Paxman diesels; 2 shafts; 920 bhp = 9 knots
Range, miles: 1 100 at 8 knots

Can carry 350 tons or 500 men. Laid down 1945 and commissioned 11 November 1948.

"LCT 4" Type *Spanish Navy*

3 EDIC TYPE (LCTs)

Name	*No.*	*Builders*	*Commissioned*
BDK 6	LCT 6 (ex-K 6)	Bazán, La Carraca	6 Dec 1966
BDK 7	LCT 7 (ex-K 7)	Bazán, La Carraca	30 Dec 1966
BDK 8	LCT 8 (ex-K 8)	Bazán, La Carraca	30 Dec 1966

Displacement, tons: 279 standard; 665 full load
Dimensions, feet (metres): 193·5 × 39 × 4·3 *(59 × 11·9 × 1·3)*
Guns: 2—12·7 mm MGs; 1—81 mm mortar
Main engines: 2 diesels; 2 shafts; 1 040 bhp = 9·5 knots
Range, miles: 1 500 at 9 knots
Complement: 17

Landing craft of the French EDIC type.

Radar: One navigation set.

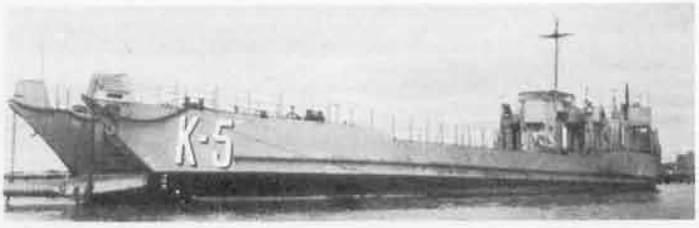
BDK 6 (old number) *1976, Royal Spanish Navy*

3 SPANISH BUILT LCTs

Name	*No.*	*Builders*	*Commissioned*
BDK 3	LCT 3 (ex-K 3)	Bazán, Ferrol	15 June 1959
BDK 4	LCT 4 (ex-K 4)	Bazán, Ferrol	15 June 1959
BDK 5	LCT 5 (ex-K 5)	Bazán, Ferrol	15 June 1959

Displacement, tons: 562 standard; 902 full load
Dimensions, feet (metres): 185·6 × 38 × 5·6 *(56·6 × 11·6 × 1·7)*
Guns: 2—20 mm (singles)
Main engines: 2 M60 V8 AS diesels; 2 shafts; 1 000 hp = 8·5 knots
Range, miles: 1 000 at 7 knots
Complement: Complement 20 (1 officer, 19 men)

All laid down 1958. Can carry 300 tons or 400 men.



BDK 5 (old number) *1971, Spanish Navy*

2 Ex-US LCUs

LCU 11 (ex-*LCU 1471*)
LCU 12 (ex-*LCU 1491*)

Displacement, tons: 360
Dimensions, feet (metres): 119·7 × 31·5 × 5·2 *(36·5 × 9·6 × 1·6)*
Speed, knots: 7·6
Complement: 13

Transferred June 1972. Sold August 1976.

6 US LCM 8

LCM 81-86 (ex-*E 81-86*)

Displacement, tons: 115 full load
Dimensions, feet (metres): 74·5 × 21·7 × 5·9 *(22·7 × 6·6 × 1·8)*
Speed, knots: 9
Complement: 5

This new class was ordered from Oxnard, California in 1974. Assembled in Spain. All commissioned in July-September 1975.

1 HOVERCRAFT

Name	*No.*	*Builders*	*Commissioned*
—	VCA-3	Chaconsa, Mercia	late 1978 (for trials)

Weight, tons: 3 empty; 4 loaded
Dimensions, feet (metres): 32·1 × 14·8 × 13·1 *(9·8 × 4·5 × 4* (height over propellers))
Main engines: 2 modified Dodge petrol engines; 440 hp = 50 knots (calm)

Can operate in seas of 6 ft. Both engines driving a hovering propeller as well as a propulsion airscrew. Originally a private venture, came under contract with the navy in December 1976, the contract including work on development of VCA-30, a ×2·5 scaled up version with an empty weight of 30 tons.

Note: Total of landing craft (including those attached to *Aragón, Castilla,* and LSTs): 2 LCUs; 12 LCMs (3) and (6); 6 LCMs (8); 16 LCPs (L); 1 LCP (R); 43 LCVPs. All of US origin except 8 LCPs (L), built at Cartagena (LCP (L) 4-7, 10-13).

MINE WARFARE FORCES

4 Ex-US "AGGRESSIVE" CLASS (MINESWEEPERS—OCEAN)

Name	*No.*	*Builders*	*Commissioned*
GUADALETE (ex-USS *Dynamic,* MSO 432)	PVZ 41	Colbert BW, Stockton, Calif	15 Dec 1953
GUADALMEDINA (ex-USS *Pivot,* MSO 463)	M 42	Wilmington BW, Calif	12 July 1954
GUADALQUIVIR (ex-USS *Persistant,* MSO 491)	M 43	Tacoma, Washington	3 Feb 1956
GUADIANA (ex-USS *Vigor,* MSO 473)	M 44	Burgess Boat Co, Manitowoc	8 Nov 1954

Displacement, tons: 665 standard; 750 full load
Dimensions, feet (metres): 172 × 36 × 13·6 *(52·4 × 11 × 4·1)*
Guns: 2—20 mm (twin)
Main engines: 4 Packard diesels; 2 shafts; cp propellers; 2 280 bhp = 15·5 knots
Oil fuel, tons: 46
Range, miles: 3 000 at 10 knots
Complement: 74 (6 officers, 68 men)

The first three were transferred and commissioned on 1 July 1971. The fourth ship was delivered 4 April 1972. All purchased August 1974.

Minehunting: Although these ships have a mine classification capability they remain as "dragaminas" having no PAP or diving facilities.

Radar: Surface search: SPS 5C.
Navigation: One set.

Sonar: SQQ 14 (VDS) with mine classification capability.

GUADALETE (old number) *1973, X. I. Taibo*

11 Ex-US "ADJUTANT", "REDWING" and "MSC 268" CLASSES (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
JUCAR (ex-*MSC 220*)	M 21	Bellingham S.Y.	June 1956
EBRO (ex-*MSC 269*)	M 22	Bellingham S.Y.	Dec 1958
DUERO (ex-*Spoonbill,* MSC 202)	M 23	Tampa Marine Corporation	Jan 1959
TAJO (ex-*MSC 287*)	M 24	Tampa Marine Corporation	July 1959
GENIL (ex-*MSC 279*)	M 25	Tacoma, Seattle	Sep 1959
ODIEL (ex-*MSC 288*)	M 26	Tampa Marine Corporation	Oct 1959
NALÓN (ex-*MSC 139*)	PVZ 51	S. Coast S.Y., Calif	Feb 1954
ULLA (ex-*MSC 265*)	PVZ 52	Adams Y.Y., Mass	July 1958
MIÑO (ex-*MSC 266*)	PVZ 53	Adams Y.Y., Mass	Oct 1956
TURIA (ex-*MSC 130*)	PVZ 54	Hildebrand D.D., NY	Jan 1955
SIL (ex-*Redwing,* MSC 200)	PVZ 55	Tampa Marine Corporation	Jan 1959

Displacement, tons: 355 standard; 384 full load
Dimensions, feet (metres): 144 × 28 × 8·2 *(43 × 8·5 × 2·5)*
Guns: 2—20 mm (1 twin)
Main engines: 2 diesels; 2 shafts; 900 bhp = 14 knots
Oil fuel, tons: 30
Range, miles: 2 700 at 10 knots
Complement: 39

Wooden hulled. Two sub-types: one with no mainmast but crane abreast the funnel: remainder have derrick on mainmast: *Ebro, Tajo, Genil, Odiel.*

Tasks: PVZ ships have been allocated to coastal patrol duties.

Radar: Decca TM 626 or RM 914.

Sonar: UQS 1.

DUERO (with mainmast) (old number) *1975, Wright and Logan*

EBRO (small crane) (old number) *1974, Dr. Giorgio Arra*

SURVEY SHIPS

4 "CASTOR" CLASS

Name	*No.*	*Builders*	*Commissioned*
CASTOR	AH 21 (ex-H 4)	Bazán, La Carraca	10 Nov 1966
POLLUX	AH 22 (ex-H 5)	Bazán, La Carraca	6 Dec 1966
ANTARES	AH 23	Bazán, La Carraca	21 Nov 1974
RIGEL	AH 24	Bazán, La Carraca	21 Nov 1974

Displacement, tons: 327 standard; 383 full load
Dimensions, feet (metres): 125·9 × 24·9 × 8·9 *(38·4 × 7·6 × 2·8)*
Main engine: 1 Sulzer 4TD-36 diesel; 720 hp = 11·7 knots
Range, miles: 3 620 at 8 knots
Complement: 39 (23 and 24) 37 (21 and 22)

Antares and *Rigel* ordered summer 1972, launched 1973. Fitted with Raydist, Omega and digital presentation of data. Cost of later ships 105 million pesetas (basic price).

Appearance: 21 and 22 have gaps in the gunwhale aft for Oropesa sweep. In 23 and 24 this is a full run to the stern.

Radar: Raytheon.

CASTOR (old number) *1974, Spanish Navy*

2 "MALASPINA" CLASS (OCEANOGRAPHIC SHIPS)

Name	*No.*	*Builders*	*Commissioned*
MALASPINA	AH 31	Bazán, La Carraca	21 Feb 1975
TOFIÑO	AH 32	Bazán, La Carraca	23 Apr 1975

Displacement, tons: 820 standard; 1 090 full load
Dimensions, feet (metres): 188·9 × 38·4 × 11·8 *(57·6 × 11·7 × 3·6)*
Guns: 2—20 mm (single)
Main engines: 2 San Carlos MWM TbRHS-345-61 diesels; 3 600 bhp; 2 vp propellers = 15·3 knots
Range, miles: 4 000 at 12 knots; 3 140 at 14·5 knots
Complement: 63 (9 officers, 54 men)

Ordered mid-1972. *Malaspina* laid down early 1973, launched 15 August 1973. *Tofiño* laid down 15 August 1973, launched 22 December 1973. Both named after their immediate predecessors. Of similar design to British "Bulldog" class costing 380 million pesetas each.

Electrical: Three 250 kVA alternators and one emergency 30 kVA.

Equipment: Fitted with Atlas Echograph *(4 500 metres)*, Raydist and Transit, Hewlett Packard 2100A computer inserted into Magnavox Transit satellite navigation system, active rudder with fixed pitch auxiliary propeller.

TOFIÑO (old number) *1976, Royal Spanish Navy*

SERVICE FORCES

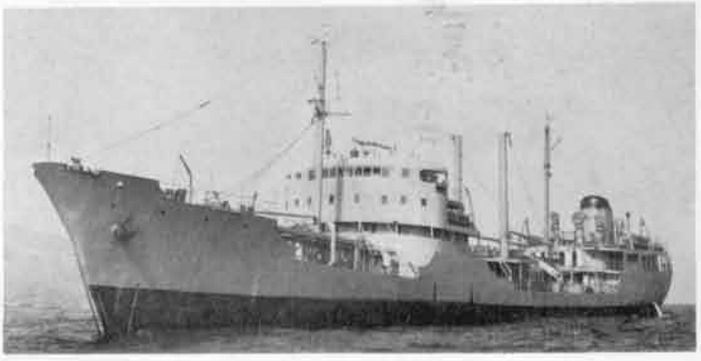
1 REPLENISHMENT TANKER

Name	*No.*	*Builders*	*Commissioned*
TEIDE	AP 11	Bazán, Cartagena	20 Oct 1956

Displacement, tons: 2 747 light; 8 030 full load
Oil capacity: 5 350 cu m
Dimensions, feet (metres): 385·5 × 48·5 × 20·3 *(117·5 × 14·8 × 6·2)*
Gun: 1—4·1 in (not mounted)
Main engines: 2 diesels; 3 360 bhp = 12 knots
Complement: 98

Ordered in December 1952. Laid down on 11 November 1954. Launched on 20 June 1955. Modernised in 1962 with refuelling at sea equipment (300 tons/hr).

Radar: Navigation: Decca TM 626.



TEIDE *1976, Royal Spanish Navy*

1 HARBOUR TANKER

YPF 41

Displacement, tons: 470
Dimensions, feet (metres): 147·5 × 25 × 9·5 *(45 × 7·6 × 2·9)*
Main engine: Deutz diesel; 220 bhp = 10 knots
Complement: 12

Built at Santander and launched in 1939.

1 HARBOUR TANKER

YPF 31

Displacement, tons: 214
Dimensions, feet (metres): 78·7 × 18 × 7·2 *(24 × 5·5 × 2·2)*
Main engine: 1 diesel; 400 hp = 10·7 knots

Built by Bazán, Cadiz 1980. Capacity 100 tons.

1 HARBOUR TANKER

YPF 21

Displacement, tons: 535
Dimensions, feet (metres): 111·5 × 22·9 × 9·8 *(34 × 7 × 3)*
Main engine: 1 diesel; 600 hp = 10·8 knots

Built by Bazán, Cartagena 1980. Capacity, 300 tons FFO.

4 HARBOUR TANKERS

YPF 3 YPF 4 YPF 5 YPF 6

Displacement, tons: 510
Dimensions, feet (metres): 121·4 × 22·3 × 9·8 *(37 × 6·8 × 3)*

8 HARBOUR TANKERS

YPG 01-03, 21, 22, 31, 41, 51

Displacement, tons: 200
Dimensions, feet (metres): 111·5 × 19·7 × 8·9 *(34 × 6 × 2·7)*

All built by Bazán between 1960 and 1965. Dimensions and displacement given refer to last three.

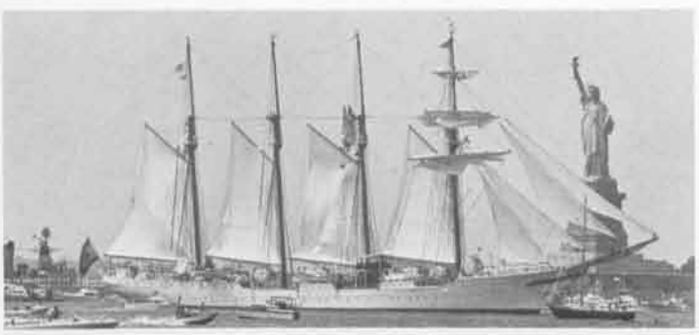
1 SAIL TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
JUAN SEBASTIAN DE ELCANO	A 01	Echevarrieta, Cadiz	28 Feb 1928

Displacement, tons: 3 420 standard; 3 754 full load
Dimensions, feet (metres): 269·2 pp; 308·5 oa × 43 × 23 *(82; 94·1 × 13·6 × 7)*
Guns: 2—37 mm (saluting)
Main engine: 1 Sulzer diesel; 1 shaft; 1 500 bhp = 9·5 knots
Oil fuel, tons: 230
Range, miles: 10 000 at 9·5 knots
Complement: 292 + 80 cadets

Four masted top-sail schooner—near sister of Chilean *Esmeralda*. Named after the first circumnavigator of the world (1519-26) who succeeded to the command of the expedition led by Magellanes after the latter's death. Laid down 24 November 1925. Launched on 5 March 1927. A successor is under design to be completed in mid-1980s.

Radar: Two Decca TM 626.



JUAN SEBASTIAN DE ELCANO and friends *7/1976, USN*

1 ROYAL YACHT

Name	*No.*	*Builders*	*Commissioned*
AZOR	A 11	Bazán, Ferrol	20 July 1949

Displacement, tons: 442 standard; 486 full load
Dimensions, feet (metres): 153 × 25·2 × 10·9 *(47 × 7·7 × 3·3)*
Main engines: 2 diesels; 1 200 bhp = 13·3 knots
Range, miles: 4 000
Complement: 47

Built as the Caudillo's yacht. Launched on 9 June 1949. Underwent an extensive refit in 1960, her hull being cut to admit an extension in length. Now painted royal blue with a buff funnel.

Radar: Decca TM 626.

AZOR *1970, X. I. Taibo*

BOOM DEFENCE VESSELS

Name	*No.*	*Builders*	*Commissioned*
—	CR 1 (ex-*G 6*)	Penhoët, France	29 July 1955

Displacement, tons: 770 standard; 850 full load
Dimensions, feet (metres): 151·9 × 33·5 × 10·5 *(46·3 × 10·2 × 3·2)*
Guns: 1—40 mm; 4—20 mm/70 (single)
Main engines: 2 diesels; electric drive; 1 shaft; 1 600 bhp = 12 knots
Oil fuel, tons: 126
Range, miles: 5 200 at 12 knots
Complement: 40

US off-shore order. Launched on 28 September 1954. Transferred from the USA in 1955 under MDAP. Sister ship of French "Cigale" class. Based at Cartagena.

Radar: One navigation set.

CR 1 *1976, Royal Spanish Navy*

YBP 01

Dimensions, feet (metres): 73·1 × 28·5 × 2·6 *(22·3 × 8·7 × 0·8)*

Gate Vessel. Delivered 1960.

YDS 01-05

Dimensions, feet (metres): 72·2 × 28·5 × 4·3 *(22 × 8·7 × 1·3)*

Net laying barges. Delivered 1959-60.

YDS 11-12, 21-22 +4

Dimensions, feet (metres): 91·8 × 27·9 × 2·3 *(28 × 8·5 × 0·7)*

Tugs for YBP and YDSs. Delivered 1959-60.

TUGS

2 OCEAN TUGS

Name	*No.*	*Builders*	*Commissioned*
—	AR 41 (ex-*RA 1*)	Bazán, Cartagena	9 July 1955
—	AR 42 (ex-*RA 2*)	Bazán, Cartagena	12 Sep 1955

Displacement, tons: 757 standard; 1 039 full load
Dimensions, feet (metres): 184 × 33·5 × 12 *(56·1 × 10·1 × 3·9)*
Guns: 2—20 mm (singles)
Mines: Can lay 24
Main engines: 2 Sulzer diesels; 3 200 bhp; 1 shaft; cp propeller = 15 knots
Oil fuel, tons: 142
Range, miles: 5 500 at 15 knots
Complement: 49

Originally known as "Valen" class.

Radar: Two Decca RM series.

AR 41 (old number) *8/1978, Michael D. J. Lennon*

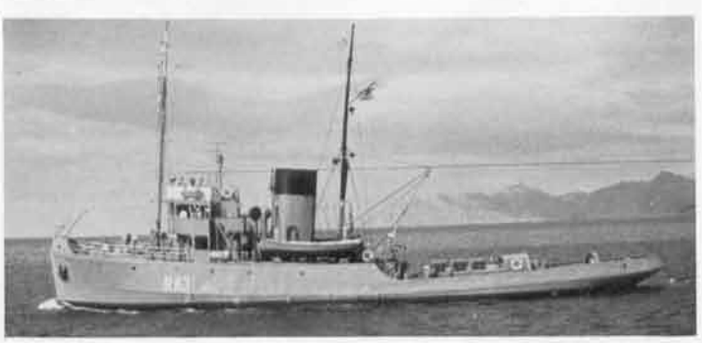
1 OCEAN TUG

Name	*No.*	*Builders*	*Commissioned*
— (ex-*Metinda III*, ex-*Empire Jean*)	AR 33 (ex-*RA 3*)	Clelands, England	Apr 1945

Displacement, tons: 762 standard; 1 080 full load
Dimensions, feet (metres): 143 × 33·1 × 14·8 *(43·6 × 10·1 × 4·5)*
Gun: 1—20 mm/70
Main engines: Triple expansion; 3 200 ihp = 10 knots
Complement: 44

Purchased by Spain 26 May 1961.

Radar: Decca.



AR 33 (old number) *1976, Royal Spanish Navy*

3 OCEAN TUGS

Name	*No.*	*Builders*	*Commissioned*
POSEIDÓN	AS 01 (ex-*RA 6*)	Bazán, La Carraca	8 Aug 1964
—	AR 44 (ex-*RA 4*)	Bazán, La Carraca	25 Mar 1964
—	AR 45 (ex-*RA 5*)	Bazán, La Carraca	11 Apr 1964

Displacement, tons: 951 standard; 1 069 full load
Dimensions, feet (metres): 183·5 × 32·8 × 13·1 *(55·9 × 10 × 4)*
Main engines: 2 Sulzer diesels; 3 200 bhp = 15 knots
Range, miles: 4 640
Complement: 49 *(Poseidón 60)*

RA 6 was renumbered when she became a frogman support ship, known as *Poseidon*. She carries a 300 metre/6 hour bathyscaphe.

Radar: Decca TM 626.

POSEIDON (old number) *1973, Dr. Giorgio Arra*

9 COASTAL TUGS

YRR 71, 72

Displacement, tons: 422
Dimensions, feet (metres): 91·8 × 26·2 × 12·5 *(28 × 8 × 3·8)*
Main engine: 1 diesel; 1 500 hp = 12·4 knots

Building by Bazán, Ferrol.

Name	*No.*	*Builders*	*Commissioned*
—	YRR 31	Bazán, Cartagena	1963
—	YRR 32	Bazán, Cartegena	1963
—	YRR 33	Bazán, Cartagena	1963
—	YRR 53	Bazán, Cartagena	1967
—	YRR 54	Bazán, Cartagena	1967
—	YRR 55	Bazán, Cartagena	1967

Displacement, tons: 205 (YRR 31-33); 227 (YRR 53-55) standard; 320 full load
Dimensions, feet (metres): 91·2 × 23 × 8·2 *(27·8 × 7 × 2·6)*
Main engines: Diesels; 1 shaft; 1 400 bhp (YRR 53-55), 800 bhp (YRR 31-33)
Complement: 13

Radar: Navigation set in YRR 31-33.

YRR 29

88·6 ft *(27 m)* long with complement of ten.
Built by Bazán, La Carraca. Commissioned 26 April 1962.

15 HARBOUR TUGS

YRP —, YRP —

Displacement, tons: 229
Dimensions, feet (metres): 91·8 × 24·6 × 11·2 *(28 × 7·5 × 3·4)*
Main engine: 1 diesel; 950 hp = 11 knots

Building by Bazán, Cartagena.

YRP 01-09, 010-012

Dimensions, feet (metres): 60·7 × 15·5 × — *(18·5 × 4·7 × –)*

Of 35 tons and 200 bhp (diesel). Commissioned 1965-67.

YRP 41

Dimensions, feet (metres): 69·7 × 19·4 × — *(21·3 × 5·9 × –)*
Complement: 8

Of 150 tons and 600 bhp (diesel). Commissioned 27 December 1961.

Note: Three tug-launches of less than 50 tons—YRP 67-69.

TORPEDO RECOVERY CRAFT

YTM 11, 16

Built by Bazán 1961-63 of 60-190 tons. To carry torpedoes and mines and, in emergency, can act as minelayers. Complement eight.

YST 05

Torpedo tracking craft on range at Alcudia, Majorca. 36 ft *(11 m)* long.

YTM 03, 04

TRVs built in 1956. Of 58·2 tons and 58·1 × 6·6 × — ft *(17·7 × 2 × — m)*. Can carry six torpedoes. Have stern ramp and crane. Based at submarine base, Cartagena.

RESEARCH CRAFT

An unpropelled underwater research base built 1976 by Bazán Cartagena. Can accommodate four. Dimensions: 40·7 × 20·7 ft *(12·4 × 6·3 m)* Hull diameter 11·8 ft *(3·6 m)*.

WATER CARRIERS

AA-02

Built in 1936. Of 1 785 tons full load with 1 000 tons capacity. Ocean-going.

AA-06

Displacement, tons: 1 785
Dimensions, feet (metres): 200 × 31·5 × 14·1 *(61 × 9·6 × 4·3)*
Main engine: Triple expansion; 1 shaft; 800 ihp = 9 knots
Complement: 27

Commissioned 30 January 1952.

AA-17, AA-21-23

Displacement, tons: 610 full load (AA-17; 706 full load)
Dimensions, feet (metres): 146·9 × 24·9 × 9·8 *(44·8 × 7·6 × 3)*
Main engine: 1 shaft = 9 knots
Range, miles: 1 000
Complement: 16

All built at Bazán, La Carraca. AA-17 commissioned 1952. AA-21-23, 24 January 1963. All ocean-going.

Radar: Navigation set (AA-21-23).

AA-23 (old number) *1973, Spanish Navy*

AA-31

Displacement, tons: 535 full load
Dimensions, feet (metres): 111·5 × 22·9 × 9·8 *(34 × 7 × 3)*
Main engine: 1 diesel; 600 hp = 10·8 knots
Capacity: 300

Built by Bazán, Cádiz. Similar to YPF 21.

AA-41

Displacement, tons: 895 full load
Dimensions, feet (metres): 160·1 × 24·6 × 11·2 *(48·8 × 7·5 × 3·4)*
Main engine: 1 diesel; 700 hp = 10·8 knots
Capacity, tons: 600

Built by Bazán, Cádiz

YA 01-03

Of less than 400 tons. Harbour water-boats with 200 tons capacity.

DIVING CRAFT

YBZ 01, 03 **NEREIDA** YBZ 11

Small self-propelled craft of less than 50 tons.

YBZ 21

New construction frogmen support craft.

YBZ 31, 32

Dumb barges for diving.

FLOATING DOCKS

YDF 01 (Cartagena)
YDF 11 (Mahon)

FLOATING CRANES

SANSÓN YGR 01 (100 tons lift)
YGR 13-15 (30 tons lift)
YGR 26-29 (15 tons lift)

Based at Cartagena, Ferrol, La Carraca and Mahón.

MISCELLANEOUS

6 VIP CRAFT

Six craft QF 01-05 (new construction) and QF 11 (ex-*LVC 79*, ex-*Cynosure*).

4 PONTOONS

GALATEA YCF 11, **VULCAN** YCF 21, **YCF 01**, **YCF 02**

38 BARGES

Numbered with prefixes YGC, YGG, YGI, YGP and YGT.

CUSTOMS SERVICE

3 "AGUILUCHO" CLASS

Name	*No.*	*Builders*	*Commissioned*
AGUILUCHO	—	J. Roberto Rodriguez e Hijos, Vigo	1973
GAVILAN I	—	J. Roberto Rodriguez e Hijos, Vigo	1975
GAVILAN II	—	J. Roberto Rodriguez e Hijos, Vigo	1976

Displacement, tons: 45
Dimensions, feet (metres): 85·5 × 16·7 × 4·3 *(26·1 × 5·1 × 1·3)*
Gun: 1 MG
Main engines: Diesels; 2 shafts; 2 750 bhp = 30 knots
Range, miles: 750 at 30 knots

Aguilucho launched 19 February 1973 for Customs duties. *Gavilan I* launched 22 July 1975.

1 "AGUILA" CLASS

Name	*No.*	*Builders*	*Commissioned*
AGUILA	—	Chantiers Navals de l'Esterel	1974

Displacement, tons: 80
Dimensions, feet (metres): 105 × 19 × 5·3 *(32 × 5·8 × 1·6)*
Guns: 2 MGs
Main engines: 2 MTU diesels; 2 700 hp = 30 knots
Complement: 16

AGUILA *Chantiers Navals de l'Esterel*

3 Ex-FRENCH "VC" CLASS

Name	*No.*	*Builders*	*Commissioned*
ALBATROS	—	CMN Cherbourg	1958
ALBATROS II	—	CMN Cherbourg	1968
ALBATROS III	—	CMN Cherbourg	1968

Displacement, tons: 82 full load
Dimensions, feet (metres): 104·5 × 15·5 × 5·5 *(31·8 × 4·7 × 1·7)*
Gun: 1—20 mm
Main engines: 2 diesels; 2 shafts; 2 700 bhp = 28 knots
Complement: 15

In addition a number of other craft, some of wartime British and German classes, operate for the Finance ministry. Some named *Milano, Sacre, Nebli, Basanta Silva, Sangual, Cárabo, Gerifalte.*

ARMY CRAFT

The Spanish Army operates a number of small cargo ships, the most recent acquisition being *Capitán Parra* (ex-smuggler *Lady Anastasia*), commissioned on 22 September 1978.

SRI LANKA

Headquarters' Appointment

Commander of the Navy:
Rear-Admiral A. W. H. Perera

Diplomatic Representation

Defence Attaché in Washington:
Major P. B. C. Dharmapala, SLCMP

Formation

The Royal Ceylon Navy was formed on 9 December 1950 when the Navy Act was proclaimed. Called the Sri Lanka Navy since Republic Day 22 May 1972.

Personnel

(a) 1981: 2 960 (221 officers and 2 739 sailors)
(b) Voluntary service
(c) SLVNF: 582 (43 officers, 539 sailors)
(d) Naval reservists: 131 (37 officers, 94 sailors)

General

Emphasis now being placed on local building of Coastal Patrol craft although a 200 mile EEZ will call for larger craft than the "Shanghais", more suitable craft than the "Mol" and, therefore, some ship or ships to replace *Gajabahu*, probably foreign built.

Naval Bases

A Naval Base established at Trincomalee, which was a British base from 1795 until 1957.
Minor bases at Karainagar, Colombo, Welisara, Tangale, and Kalpitiya.

Prefix to Ships' Names

SLNS

Strength of the Fleet

Type	*Active*	*Building*
Fast Attack Craft—Gun	8	—
Coastal Patrol Craft	25	—
Lighthouse Services Vessel	1	—

Mercantile Marine

Lloyd's Register of Shipping:
40 vessels of 93 471 tons gross

DELETIONS

1974 Short hydrofoil
1975 Tug *Aliya*
1978-79 *Gajabahu*, 7 Thornycroft Patrol Craft (106, 201, 204, 205, 207, 208, 210), *Seruwa, Tarawa*
1979-80 2 Thornycroft Patrol Craft (107, 202)

LIGHT FORCES

7 "SOORAYA" CLASS (Ex-CHINESE "SHANGHAI II") (FAST ATTACK CRAFT—GUN)

BALAWATHA	**RAKSHAKA**	**SOORAYA**
DAKSAYA	**RANAKAMI**	**WEERAYA**
JAGATHA		

Displacement, tons: 155 full load
Dimensions, feet (metres): 127·3 × 17·7 × 5·2 *(38·8 × 5·4 × 1·6)*
Guns: 4—37 mm (2 twin); 4—25 mm (2 twin abaft the bridge)
A/S weapons: 8 DCs
Main engines: 4 diesels; 4 800 bhp; 4 shafts = 30 knots
Range, miles: 800 at 17 knots
Complement: 25

The first pair was transferred by China in February 1972, the second pair in July 1972, one in December 1972 and two more in 1980 *(Jagatha* and *Rakshaka)*. In monsoonal conditions off the coast of Sri Lanka these boats are lively and uncomfortable.

Radar: Skin Head.

SOORAYA *1974, Sri Lanka Navy*

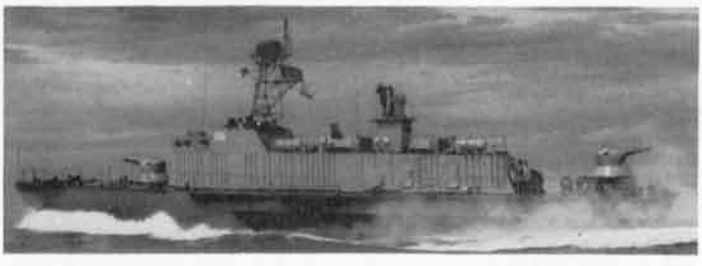
1 Ex-SOVIET "MOL" CLASS (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
SAMUDRA DEVI	P 3250	USSR	31 Dec 1975

Displacement, tons: 170 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Guns: 4—30 mm (twin)
Main engines: 3 M 504 diesels; 12 000 bhp; 3 shafts
Speed, knots: 40
Complement: 25

Built 1975. Has certain variations from standard Soviet craft although the hull is a basic "Osa" type. The after radar pedestal mounts only a Kolonka optical sight and the torpedo tubes have been unshipped although the sponsons remain. An additional section of superstructure has been added abaft the after pedestal.

Radar: Don and High Pole IFF.



SAMUDRA DEVI *12/1975, Sri Lanka Navy*

6 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
—	431	Colombo D.Y. Ltd	1980
—	432	Colombo D.Y. Ltd	1980
—	433	Colombo D.Y. Ltd	1980
—	434	Colombo D.Y. Ltd	1981
—	435	Colombo D.Y. Ltd	1981
—	436	Colombo D.Y. Ltd	1981

Displacement, tons: 40
Dimensions, feet (metres): 66 × 18 × 7 *(20 × 5·5 × 2·1)*
Guns: 2—20 mm
Main engines: 2 General Motors 12V 71-TI diesels; 1 240 hp; 2 shafts = 22 knots
Range, miles: 1 500 at 14 knots
Complement: 10

Ordered June 1976 (first pair) and November 1976.

40 ton Coastal Patrol Craft *1979, Colombo Dockyard Ltd*

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
HANSAYA	P 411	Korody Marine Corporation, Venice	1956
LIHINIYA	P 412	Korody Marine Corporation, Venice	1956

Displacement, tons: 36
Dimensions, feet (metres): 66 × 14 × 4 *(20·1 × 4·3 × 1·2)*
Main engines: 2 General Motors diesels; 900 bhp = 16 knots

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
—	201	Colombo D.Y. Ltd	Nov 1977
—	203	Colombo D.Y. Ltd	Nov 1977

Displacement, tons: 15
Dimensions, feet (metres): 45 × 12 × 3 *(13·7 × 3·6 × 0·9)*
Main engines: 2 diesels; 1 240 hp; 2 shafts = 19 knots
Range, miles: 250 at 16 knots
Complement: 5

5 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
BELIKAWA	421	Cheverton Workboats (UK)	Apr 1977
DIYAKAWA	422	Cheverton Workboats (UK)	June 1977
KORAWAKKA	423	Cheverton Workboats (UK)	July 1977
SERUWA	424	Cheverton Workboats (UK)	Sep 1977
TARAWA	425	Cheverton Workboats (UK)	Oct 1977

Displacement, tons: 22
Dimensions, feet (metres): 55·9 × 14·8 × 3·9 *(17 × 4·5 × 1·2)*
Guns: 3 MGs
Main engines: Two diesels; 1 280 hp; 2 shafts = 23 knots
Range, miles: 1 000 at 12 knots
Complement: 7

Decca navigation radar. Originally provided for the Customs service but used for general patrol duties.

BELIKAWA *1977, Cheverton Workboats*

10 THORNYCROFT TYPE (COASTAL and HARBOUR PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	101	Thornycroft (Malaysia) Ltd, Singapore	1966
—	102	Thornycroft (Malaysia) Ltd, Singapore	1966
—	103	Thornycroft (Malaysia) Ltd, Singapore	1966
—	104	Thornycroft (Malaysia) Ltd, Singapore	1967
—	105	Thornycroft (Malaysia) Ltd, Singapore	1967
—	108	Thornycroft (Malaysia) Ltd, Singapore	1967
—	109	Thornycroft (Malaysia) Ltd, Singapore	1967
—	110	Thornycroft (Malaysia) Ltd, Singapore	1967
—	206	Thornycroft (Malaysia) Ltd, Singapore	1968
—	211	Thornycroft (Malaysia) Ltd, Singapore	1968

Displacement, tons: 13
Dimensions, feet (metres): 45·5 × 12 × 3 *(14·9 × 3·9 × 0·9)*
Main engines: 102: Thornycroft K6SMI engines; 500 bhp; 2 shafts = 25 knots
Remainder: General Motors 6 71-Series; 500 bhp; 2 shafts = 25 knots

The hulls are of hard chine type with double skin teak planking. Equipped with radar, radio, searchlight etc. Two ordered in 1965. Seven ordered in 1966. Assembled in Sri Lanka and completed by September 1968. Originally 21 boats.
They are based, as two squadrons, at Kalpitiya and Karainagar. 103, 104, 108 and 109 used solely for harbour duties.

MISCELLANEOUS

1 LIGHTHOUSE SERVICES VESSEL

Name	*No.*	*Builders*	*Commissioned*
PRADEEPA (ex-ILHSS *Frank Rees*)	A 501	Hawkers, UK	—

Displacement, tons: 57
Dimensions, feet (metres): 65·8 × 18 × 7 *(20 × 5·5 × 2·1)*
Main engine: 1 Kelvin 6-cyl diesel

Commissioned in navy 1 April 1976.

SUDAN

Establishment

The navy was established in 1962 to operate on the Red Sea coast and on the River Nile. The original training staff was from Yugoslav Navy, but this staff left in 1972.

Diplomatic Representation

Naval, Military and Air Attaché in London:
Colonel El Sir Mohamed Ahmed

Personnel

(a) 1981: 600 officers and men
(b) Voluntary service

Bases

Port Sudan for Red Sea operations with a separate riverine unit on the Nile based at Khartoum.

General

The overall standard of operational efficiency has apparently suffered from lack of maintenance and spare parts.

Mercantile Marine

Lloyd's Register of Shipping:
21 vessels of 104 803 tons gross

LIGHT FORCES

2 Ex-YUGOSLAV "KRALJEVICA" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
EL FASHER	522	Yugoslavia	1954
EL KHARTOUM	523	Yugoslavia	1955

Displacement, tons: 190 standard; 245 full load
Dimensions, feet (metres): 134·5 × 20·7 × 7·2 *(41 × 6·3 × 2·2)*
Guns: 2—40 mm; 2—20 mm
Main engines: Diesel; 2 shafts; 3 300 bhp = 20 knots
Range, miles: 1 500 at 12 knots

Transferred from the Yugoslav Navy during 1969.

"KRALJEVICA" Class

4 Ex-YUGOSLAV PBR TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
GIHAD	PB 1	Mosor Shipyard, Trogir, Yugoslavia	1961
HORRIYA	PB 2	Mosor Shipyard, Trogir, Yugoslavia	1961
ISTIQLAL	PB 3	Mosor Shipyard, Trogir, Yugoslavia	1962
SHAAB	PB 4	Mosor Shipyard, Trogir, Yugoslavia	1962

Displacement, tons: 100
Dimensions, feet (metres): 115 × 16·5 × 5·2 *(35 × 5 × 1·7)*
Guns: 1—40 mm; 1—20 mm; 2—7·6 mm MGs
Main engines: Mercedes-Benz (MTU 12V 493) diesels; 2 shafts; 1 800 bhp = 20 knots
Range, miles: 1 400 at 12 knots
Complement: 20

Of steel construction. First craft acquired by the newly established Sudanese Navy.

GIHAD

3 Ex-IRANIAN COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
SHEIKAN (ex-*Gohar*)	128	Abeking and Rasmussen	1970
KADIR (ex-*Shahpar*)	129	Abeking and Rasmussen	1970
KARARI (ex-*Shahram*)	130	Abeking and Rasmussen	1970

Displacement, tons: 70
Dimensions, feet (metres): 75·2 × 16·5 × 6 *(22·9 × 5 × 1·8)*
Main engines: 2 diesels; 2 shafts; 2 200 hp = 27 knots
Complement: 19

Built for Iran. Transferred to Iranian Coast Guard 1975 and to Sudan later that year.

6 Ex-YUGOSLAV "101" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 55 standard; 60 full load
Dimensions, feet (metres): 78 × 21·3 × 7·8 *(23·8 × 6·5 × 2·4)*
Guns: 2—40 mm; 2—20 mm (single)
Main engines: 3 Packard petrol motors; 3 shafts; 5 000 bhp = 36 knots
Complement: 14

Transferred in this "Gun" version of the class in 1970. Same characteristics as US "Higgins" class.

"101" Class

AMPHIBIOUS FORCES

3 Ex-YUGOSLAV "DTM 221" CLASS (LCTs)

SOBAT **DINDER** **+1**

Displacement, tons: 410
Dimensions, feet (metres): 155·1 × 21 × 7·5 *(47·3 × 6·4 × 2·3)*
Guns: 1—20 mm; 2—12·7 mm
Speed, knots: 9
Complement: 15

Transferred during 1969.

"DTM 221" Class

SERVICE FORCES

1 SUPPORT TANKER

FASHODA (ex-PN 17)

Displacement, tons: 420 standard; 650 full load
Dimensions, feet (metres): 141·5 × 22·8 × 13·6 *(43·2 × 7 × 4·2)*
Main engines: 300 bhp = 7 knots

Former Yugoslav tanker rehabilitated and transferred to the Sudanese Navy in 1969.

1 SURVEY SHIP

TIENGA

A small vessel, converted into a hydrographic ship, acquired from Yugoslavia in 1969.

1 WATER BOAT

BARAKA (ex-PV 6)

A small water carrier, transferred from Yugoslavia to the Sudanese Navy in 1969.

SURINAME

Formerly Dutch Guiana—granted independence in 1975.

Personnel

1981: 160 officers and men

Base

Paramaribo

Mercantile Marine

Lloyd's Register of Shipping:
25 vessels of 14 921 tons gross

LIGHT FORCES

3 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
—	S 401	De Vries, Aalsmeer, Netherlands	6 Nov 1976
—	S 402	De Vries, Aalsmeer, Netherlands	3 May 1977
—	S 403	De Vries, Aalsmeer, Netherlands	1 Nov 1977

Displacement, tons: 140
Dimensions, feet (metres): 105 × 21·3 × 5·5 *(32 × 6·5 × 1·7)*
Guns: 2—40 mm; 2—303 in MGs
Main engines: 2 Paxman 12 YHCM diesels; 2 110 hp = 17·5 knots
Range, miles: 1 200 at 13·5 knots
Complement: 15

This design has far greater speed and armament potential but Suriname apparently opted for the scaled-down version.

S 403 *1980, Suriname Ministry*

3 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
—	C 301	Schottel, Netherlands	Feb 1976
—	C 302	Schottel, Netherlands	Feb 1976
—	C 303	Schottel, Netherlands	Nov 1976

Displacement, tons: 65
Dimensions, feet (metres): 72·2 × 15·5 × 7·6 *(22 × 4·7 × 2·3)*
Main engines: 1—5 in MG; 2—303 in MGs
Main engines: 2 Dorman 8JT diesels; 560 hp; 2 shafts
Range, miles: 650 at 13·5 knots
Complement: 8

Ordered April 1975.

C 301 *1980, Suriname Ministry*

3 RIVER PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
BAHADOER	RP 201	Schottel, Netherlands	Dec 1975
FAJABLOW	RP 202	Schottel, Netherlands	Dec 1975
KORANGON	RP 203	Schottel, Netherlands	Feb 1976

Displacement, tons: 15
Dimensions, feet (metres): 41·4 × 12·5 × 3·6 *(12·6 × 3·8 × 1·1)*
Gun: 1 MG
Main engine: 1 Dorman 8 JT; 280 hp
Range, miles: 350 at 10 knots
Complement: 4

Ordered December 1974.

KORANGON *1980, Suriname Ministry*

1 COASTAL PATROL CRAFT

Length, feet (metres): 32·8 *(10)*
Main engine: 1 Dorman 8 JT; 280 hp

Ordered December 1974 from Schottel, Netherlands. Delivered August 1975.

SWEDEN

Ministerial

Minister of Defence:
Erik Krönmark

Headquarters' Appointments

Commander-in-Chief:
Vice-Admiral Per Rudberg
Chief of Naval Material Department:
Rear-Admiral Gunnar Grandin
Chief of Naval Staff:
Major-General Bo Varenius (Coastal Artillery)

Senior Command

Commander-in-Chief of Coastal Fleet:
Rear-Admiral Bror Stefenson

Diplomatic Representation

Defence and Naval Attaché in London:
Rear-Admiral Rolf Rheborg
Naval Attaché in Moscow:
Captain Nils Hellström
Naval Attaché in Washington:
Captain Åke Johnson

Personnel

(a) 1981: 14 900 officers and men of Navy and Coast Artillery made up of 4 800 regulars, 3 100 reservists and 7 000 national servicemen. In addition 8 000 conscripts receive annual training
(b) 7½-15 months' national service

Bases

Stockholm, Karlskrona, Göteborg
Minor base at Härnösand

Composition of the Navy

In addition to seagoing personnel the Navy includes the Coastal Artillery, manning 20 mobile and 45 coastal batteries of both major guns and SSMs. A number of amphibious and patrol craft are also controlled by the Coastal Artillery.

Naval Air Arm

5 Alouette II helicopters (training)
10 Jet Ranger helicopters
10 Vertol 107 (3 Hkp-4B and 7 Hkp-4C)

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines—Patrol	12	4
Destroyers	3	—
Fast Attack Craft—Missile	17	—
Fast Attack Craft—Torpedo	22	—
Large Patrol Craft	7	—
Coastal Patrol Craft	26	—
Minelayers	3	1
Minelayers—Coastal	9	—
Minelayers—Small	16	—
Minesweepers—Coastal	12	—
Minesweepers—Inshore	18	—
LCMs	9	—
LCUs	81	—
LCAs	54	—
Mine Transports	2	—
Survey Ships	6	—
Tanker—Support	1	—
Supply Ship	1	—
Tugs	19	—
Salvage Ship	1	—
Sail Training Ships	2	—
Icebreakers	8	—
TRVs	3	—
Tenders	15	—
Water Boats	2	—
Coast Guard	7	—

Mercantile Marine

Lloyd's Register of Shipping:
700 vessels of 4 233 977 tons gross

DELETIONS

Submarines

1975 *Gäddan, Siken* ("Abborren" class)
1976 *Abborren, Laxen, Makrillen* ("Abborren" class)
1978 *Bävern, Hajen, Illern, Sälen, Uttern, Valen*
1981 *Draken, Gripen*

Destroyers

1979 *Östergotland, Södermanland, Gästrikland*

Frigates

1974 *Karlskrona*
1978 *Halsingborg, Kalmar, Öland, Uppland*
1981 *Visby, Sundsvall*

Light Forces

1975 *T 38, 39, 40*
1976 *T 102-106*
1977 *T 108-109, T 111*
1978 *T 46-52*
1981 *T 107, T 110, T 112*

Mine Warfare Forces

1977 *Orust, Tjörn*

Surveying Vessel

1975 *Ledaren*

Depot Ship

1976 *Marieholm*

Miscellaneous

1974 *Ymer* (icebreaker)
1975 *Urd* (experimental ship)

PENNANT LIST

Submarines

Del	Delfinen
Näc	Näcken
Naj	Najad
Nep	Neptun
Nor	Nordkaparen
Sbj	Sjöbjörnen
Shu	Sjöhunden
Shä	Sjöhästen
Sle	Sjölejonet
Sor	Sjöormen
Spr	Springaren
Vgn	Vargen

Destroyers

J 18	Halland
J 19	Småland
J 23	Hälsingland

Light Forces

P 150	Jägaren
P 151	Hugin
P 152	Munin
P 153	Magne
P 154	Mode
P 155	Vale
P 156	Vidar
P 157	Mjölner
P 158	Mysing
P 159	Kaparen
P 160	Väktaren
P 161	Snapphanen
P 162	Spejaren
P 163	Styrbjörn
P 164	Starkodder

Light Forces

P 165	Tordön
P 166	Tirfing
SVK 1-5	CPC
T 53-56	"T 42" class
T 121	Spica
T 122	Sirius
T 123	Capella
T 124	Castor
T 125	Vega
T 126	Virgo
T 131	Norrköping
T 132	Nynäshamn
T 133	Norrtälje
T 134	Varberg
T 135	Västerås
T 136	Västervik
T 137	Umea
T 138	Pitea
T 139	Lulea
T 140	Halmstad
T 141	Strömstad
T 142	Ystad
V 01	Skanör
V 02	Smyge
V 03	Arild
V 04	Viken
V 51	Hanö
V 52	Tärnö
V 53	Tjurkö
V 54	Sturkö
V 55	Örnö
V 56	Utö
V 57	LPC

Amphibious Forces

A 324	Ane
A 325	Balder
A 326	Loke
A 327	Ring

Amphibious Forces

A 333	Skagul
A 335	Sleipner
201-276	LCUs
280-284	LCUs
301-354	LCAs

Mine Warfare Forces

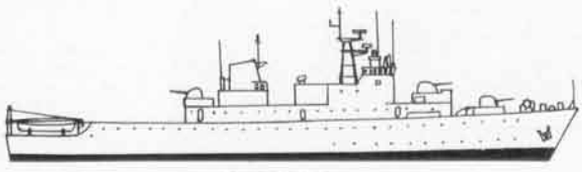
M 01	Älvsnabben
M 02	Älvsborg
M 03	Visborg
M 04	Carlskrona
M 15-16, 21-26	MSI
M 31	Gässten
M 32	Norsten
M 33	Viksten
M 43	Hisingen
M 44	Blackan
M 45	Dämman
M 46	Galten
M 47	Gillöga
M 48	Rödlöga
M 49	Svartlöga
M 57	Arkö
M 58	Spärö
M 59	Karlsö
M 60	Iggö
M 61	Styrsö
M 62	Skaftö
M 63	Aspö
M 64	Hasslö
M 65	Vinö
M 66	Vällö
M 67	Nämdö
M 68	Blidö
MUL 11-19	Coastal Minelayers
501-516	Small Minelayers

Service Forces

A 211	Belos
A 216	Unden
A 217	Fryken
A 221	Freja
A 228	Brännaren
A 231	Lommen
A 232	Spoven
A 236	Fällaren
A 237	Minören
A 241	Urd
A 242	Skuld
A 246	Hagern
A 247	Pelikanen
A 248	Pingvinen
A 251	Achilles
A 252	Ajax
A 253	Hermes
A 256	Sigrun
A 321	Hector
A 322	Heros
A 323	Hercules
A 324	Hera
A 326	Hebe
A 327	Passop
A 328	Ran
A 329	Henrik
A 330	Atlas
A 332	Märsgarn
A 336	Vitsgarn
A 341	ATB 1
A 342	ATB 2
A 343	ATB 3
A 345	Granaten
A 347	Edda
A 349	Gerda
L 51-55	LCUs
S 01	Gladan
S 02	Falken

"ÖSTERGÖTLAND" Class

"HALLAND" Class



"ÄLVSBORG" Class

CARLSKRONA

SUBMARINES

Notes: (a) Submarines do not have pennant numbers on fin but carry distinctive letters in their place.
(b) A rescue vehicle, *Urf*, of 52 tons with a diving depth of 1 500 ft *(460 m)* was launched 17 April 1978. Similar to US Navy DSRV she has a capacity for 25 men on each dive.

URF *1979, Kockums*

NEW CONSTRUCTION "A 17" CLASS

Design contract for four boats awarded to Kockums, Malmö on 17 April 1978. Contract for construction of these boats awarded June (?) 1980 for completion mid-1980s.

3 "NÄCKEN" CLASS (A 14)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
NÄCKEN	Näk	Kockums, Malmö	Nov 1972	17 Apr 1978	1 Apr 1979
NAJAD	Naj	Karlskrona Varvet	Sep 1973	6 Dec 1978	1979
NEPTUN	Nep	Kockums, Malmö	Mar 1974	13 Aug 1979	1980

Displacement, tons: 980 surfaced; 1 125 dived
Dimensions, feet (metres): 135 × 20 × 13·4 *(41 × 6·1 × 4·1)*
Torpedo tubes: 6—21 in *(533 mm)*
Mines: Minelaying capability
Main machinery: Diesels; electric motors; 1 shaft with large 5-bladed propeller
Speed, knots: 20 surfaced and dived
Complement: 19

The very high beam to length ratio is notable in this Albacore hull design. Have large bow mounted sonar. Main accommodation space is abaft the control room with machinery spaces right aft. A central computer provides both attack information and date on main machinery. Single periscope.

NÄCKEN *1979, Royal Swedish Navy*

5 "SJÖORMEN" CLASS (A 11B)

Name	No.	Builders	Laid down	Launched	Commissioned
SJÖORMEN	Sor	Kockums, Malmö	1965	25 Jan 1967	31 July 1967
SJÖLEJONET	Sle	Kockums, Malmö	1966	29 June 1967	16 Dec 1968
SJÖHUNDEN	Shu	Kockums, Malmö	1966	21 Mar 1968	25 June 1969
SJÖBJÖRNEN	Sbj	Karlskrona Varvet	1967	6 Aug 1968	28 Feb 1969
SJÖHÄSTEN	Shä	Karlskrona Varvet	1966	9 Jan 1968	15 Sep 1969

Displacement, tons: 1 125 standard; 1 400 dived
Dimensions, feet (metres): 167·3 × 20 × 16·7 *(50·5 × 6·1 × 5·1)*
Torpedo tubes: 4—21 in *(533 mm)* bow; 2 A/S tubes
Main machinery: 2 Pielstick diesels; 1 large 5-bladed propeller; 2 200 bhp; 1 electric motor
Speed, knots: 15 surfaced; 20 dived
Endurance: 3 weeks
Complement: 23

Albacore hull. Twin-decked. Diving depth 500 ft.

SJÖORMEN *1979, Royal Swedish Navy*

4 "DRAKEN" CLASS (A 11)

Name	No.	Builders	Laid down	Launched	Commissioned
DELFINEN	Del	Karlskrona Varvet	1959	7 Mar 1961	7 June 1962
NORDKAPAREN	Nor	Kockums, Malmö	1959	8 Mar 1961	4 Apr 1962
SPRINGAREN	Spr	Kockums, Malmö	1960	31 Aug 1961	7 Nov 1962
VARGEN	Vgn	Kockums, Malmö	1958	20 May 1960	15 Nov 1961

Displacement, tons: 770 standard; 835 surfaced; 1 110 dived
Dimensions, feet (metres): 226·4 × 16·7 × 16·4 *(69 × 5·1 × 5)*
Torpedo tubes: 4—21 in *(533 mm)* bow
Main machinery: 2 Pielstick diesels; 1 660 bhp; 1 large 5-bladed propeller; 1 electric motor
Speed, knots: 17 surfaced; 20 dived
Complement: 36

DELFINEN *5/1976, Reinhard Nerlich*

DESTROYERS

1 "ÖSTERGÖTLAND" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HÄLSINGLAND	J 23	Kockums Mek Verkstads A/B	1 Oct 1955	14 Jan 1957	17 June 1959

Displacement, tons: 2 150 standard; 2 600 full load
Dimensions, feet (metres): 367·5 × 36·8 × 12 *(112 × 11·2 × 3·7)*
Missiles: SSM; RB 08A (Mk 20 launcher)
SAM; Seacat (RB 07) (1 quad launcher)
Guns: 4—4·7 in *(120 mm)*/50 (twin); 4—40 mm/70 (single)
A/S weapons: 1 triple-barrelled Squid
Torpedo tubes: 6—21 in *(533 mm)* (1 mount)
Mines: 60 can be carried
Main engines: De Laval turbines; 2 shafts; 47 000 bhp
Boilers: 2 Babcock & Wilcox
Speed, knots: 35
Oil fuel, tons: 330
Range, miles: 2 200 at 20 knots
Complement: 244 (18 officers, 226 men)

Modernisation: *Hälsingland* in 1968.

Radar: Search and target designator: Thomson CSF Saturn.
Fire control: HSA M 44 for Seacat—M 45 series for guns.

HÄLSINGLAND *1980, Royal Swedish Navy*

2 "HALLAND" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
HALLAND	J 18	Götaverken, Göteborg	1951	16 July 1952	8 June 1955
SMÅLAND	J 19	Eriksberg Mek Verkstads	1951	23 Oct 1952	12 Jan 1956

Displacement, tons: 2 800 standard; 3 400 full load
Dimensions, feet (metres): 397·2 × 41·3 × 14·8 *(121 × 12·6 × 4·5)*
Missiles: SSM; RB 08A (Mk 20 launcher)
Guns: 4—4·7 in *(120 mm)*/50 (twin); 2—57 mm/60 (twin); 6—40 mm/70
A/S weapons: Two 4-barrelled rocket-launcher (Bofors)
Torpedo tubes: 8—21 in *(533 mm)* (1 quin, 1 triple)
Mines: Can be fitted for minelaying
Main engines: De Laval double reduction geared turbines; 2 shafts; 58 000 bhp
Boilers: 2 Penhöet
Speed, knots: 35
Oil fuel, tons: 500
Range, miles: 3 000 at 20 knots
Complement: 290 (18 officers, 272 men)

Both ordered in 1948. The first Swedish destroyers of post-war design. Fully automatic gun turrets forward and aft. Both modernised in 1962. *Småland* in refit.

Missiles: Re-equipped with missiles 1977-78.

SMÅLAND *5/1979, Michael D. J. Lennon*

Radar: Air and surface search and tracking: Philips 9 LV 200.

LIGHT FORCES

17 "HUGIN" (Ex-"JÄGAREN") CLASS (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
JÄGAREN	P 150	Bergens M.V., Norway	8 June 1972
HUGIN	P 151	Bergens M.V., Norway	3 July 1978
MUNIN	P 152	Bergens M.V., Norway	3 July 1978
MAGNE	P 153	Bergens M.V., Norway	12 Oct 1978
MODE	P 154	Westamarin, Norway	12 Jan 1979
VALE	P 155	Westamarin, Norway	26 Apr 1979
VIDAR	P 156	Westamarin, Norway	10 Aug 1979
MJÖLNER	P 157	Westamarin, Norway	25 Oct 1979
MYSING	P 158	Westamarin, Norway	1980
KAPAREN	P 159	Bergens M.V., Norway	1980
VÄKTAREN	P 160	Bergens M.V., Norway	1980
SNAPPHANEN	P 161	Bergens M.V., Norway	1980
SPEJAREN	P 162	Bergens M.V., Norway	1980
STYRBJÖRN	P 163	Bergens M.V., Norway	1980
STARKODDER	P 164	Bergens M.V., Norway	1980
TORDÖN	P 165	Bergens M.V., Norway	Jan 1981
TIRFING	P 166	Bergens M.V., Norway	Mar 1981

Displacement, tons: 150
Dimensions, feet (metres): 118 × 20·3 × 11·8 (screws) *(36·5 × 6·2 × 3·6)*
Missiles: SSM; 6 (see notes)
Gun: 1—57 mm/70 Bofors
Mines: (see note)
Main engines: 2 MTU MB20V 672 TY90 diesels; 2 shafts; 7 200 bhp = 35 knots
Complement: 22 (3 officers, 19 men)

Instead of the motor gunboats projected for several years a choice was made of fast attack craft similar to the Norwegian "Hauk" class originally armed with Penguin missiles although later all boats are to be fitted with Swedish RB 15 missiles (range 100 kms) resulting in a delay of about four years before they are missile-armed.
Jägaren underwent extensive trials and, on 15 May 1975, an order for a further 11 was placed with Bergens Mekaniske Verksted, Norway and five from Westamarin. *Hugin* and *Munin* reached Sweden on 6 July 1978. *Magne* was launched 9 January 1978, *Mode* on 8 August 1978. Guns and electronics provided from Sweden. Main engines from deleted "Plejad" class, refitted and up-rated by MTU. Fitted for alternative minelaying capability aft.
An extra deck-mounting ring is fitted amidships though this would be blanked by missile mounts.
Jägaren was originally commissioned as P 151, later changed to P 150.

Mines: Mine-rails extend from after end of bridge superstructure with an extension over the stern. Use of these would mean the removal of any missiles.

Radar: Philips 9LV 200 Mk 2 system.
Navigation: Skanter 16-in Mk 009.

Sonar: Simrad SQ 3D/SF.

MAGNE *1980, Royal Swedish Navy*

12 "SPICA T 131" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
NORRKÖPING	T 131	Karlskrona Varvet	1 Mar 1973
NYNÄSHAMN	T 132	Karlskrona Varvet	8 Sep 1973
NORRTÄLJE	T 133	Karlskrona Varvet	1 Feb 1974
VARBERG	T 134	Karlskrona Varvet	13 June 1974
VÄSTERÅS	T 135	Karlskrona Varvet	25 Oct 1974
VÄSTERVIK	T 136	Karlskrona Varvet	15 Jan 1975
UMEÅ	T 137	Karlskrona Varvet	15 May 1975
PITEA	T 138	Karlskrona Varvet	13 Sep 1975
LULEA	T 139	Karlskrona Varvet	28 Nov 1975
HALMSTAD	T 140	Karlskrona Varvet	9 Apr 1976
STRÖMSTAD	T 141	Karlskrona Varvet	13 Sep 1976
YSTAD	T 142	Karlskrona Varvet	10 Jan 1976

Displacement, tons: 230
Dimensions, feet (metres): 134·5 × 23·3 × 7·4 *(41 × 7·1 × 2·4)*
Gun: 1—57 mm/70 Bofors
Rocket launchers: 8 for 57 mm flare rockets
Torpedo tubes: 6—21 in *(533 mm)* for wire-guided torpedoes (see notes)
Main engines: 3 Rolls-Royce Proteus gas turbines; 3 shafts; 12 900 bhp = 40·5 knots
Complement: 27

Similar to the original "Spica" class from which they were developed. Launched—*Norrköping* 16 November 1972, *Nynashamn* 24 April 1973, *Norrtälje* 18 September 1973, *Varberg* 2 February 1974, *Västeräs* 15 May 1974, *Västervik* 2 September 1974, *Umeå* 13 January 1975, *Pitea* 12 May 1975. Laid down—*Lulea* 6 September 1974, *Halmstad* 7 February 1975.

Missiles: Plans exist for the fitting of four or eight missile launchers for Swedish RB15 aft in place of two or four torpedo tubes.

Radar: Philips Teleindustrie 9 LV 200-simultaneous air and surface search in I band with tracking in separate band.

HALMSTAD *1979, Royal Swedish Navy*

4 "T 42" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	No.	Builders	Commissioned
—	T 53	Naval Dockyard, Stockholm	1958
—	T 54	Naval Dockyard, Stockholm	1959
—	T 55	Naval Dockyard, Stockholm	1959
—	T 56	Naval Dockyard, Stockholm	1959

Displacement, tons: 40 standard
Dimensions, feet (metres): 75·5 × 19·4 × 4·6 *(23 × 5·9 × 1·4)*
Gun: 1—40 mm Bofors
Rocket launchers: 1—12 rail 57 mm flare launcher
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3 Isotta Fraschini petrol engines; 4 500 bhp = 45 knots

T 42-45 converted to "V 01" class.

T 56 *1975, Royal Swedish Navy*

6 "SPICA T 121" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
SPICA	T 121	Götaverken, Göteborg	1966
SIRIUS	T 122	Götaverken, Göteborg	1966
CAPELLA	T 123	Götaverken, Göteborg	1966
CASTOR	T 124	Karlskrona Varvet	1967
VEGA	T 125	Karlskrona Varvet	1967
VIRGO	T 126	Karlskrona Varvet	1967

Displacement, tons: 200 standard; 230 full load
Dimensions, feet (metres): 134·5 × 23·3 × 7·4 *(41 × 7·1 × 2·4)*
Gun: 1—57 mm/70 Bofors
Torpedo tubes: 6—21 in *(533 mm)* (single, fixed) (see notes)
Rocket launchers: 6—57 mm flare rockets; 4—103 mm flare rockets
Main engines: 3 Bristol Siddeley Proteus gas turbines; 3 shafts; 12 720 shp = 40 knots
Complement: 28 (7 officers, 21 ratings)

The 57 mm gun is in a power operated turret controlled by a radar equipped director.

Missiles: Plans exist for the fitting of four or eight missile launchers for Swedish RB15 in place of two or four torpedo tubes.

Radar: M 22 fire control system with co-mounted radars in radome for guns and torpedoes.

CASTOR *1979, Royal Swedish Navy*

6 "HANÖ" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
HANÖ	V 51	Karlskrona Varvet	1954
TÄRNÖ	V 52	Karlskrona Varvet	1954
TJURKÖ	V 53	Karlskrona Varvet	1954
STURKÖ	V 54	Karlskrona Varvet	1954
ORNÖ	V 55	Karlskrona Varvet	1954
UTÖ	V 56	Karlskrona Varvet	1954

Displacement, tons: 275 standard
Dimensions, feet (metres): 131·2 × 23 × 8 *(40 × 7 × 2·4)*
Guns: 2—40 mm/70 (except *Utö;* 1—40mm) (single)
Main engines: 2 Nohab diesels; 2 shafts; 910 bhp = 14·5 knots

Former minesweepers with steel hulls. Converted for patrol duties—reclassified 1 January 1979.

TJURKÖ (old number) *1975, Royal Swedish Navy*

1 LARGE PATROL CRAFT

V 57

Displacement, tons: 115 standard
Dimensions, feet (metres): 98 × 17·3 × 7·5 *(30 × 5·3 × 2·3)*
Gun: 1—20 mm
Main engine: Diesel; 500 bhp = 13·5 knots
Complement: 12

Built at Stockholm. Launched in 1953. Fitted for minelaying. Attached to Coastal Artillery.

5 COASTAL PATROL CRAFT

SVK 1 **SVK 2** **SVK 3** **SVK 4** **SVK 5**

Displacement, tons: 19 standard
Dimensions, feet (metres): 52·5 × 12·1 × 3·9 *(16 × 3·7 × 1·2)*
Gun: 1—20 mm
Main engine: Diesel; 100 to 135 bhp = 10 knots
Complement: 12

Patrol craft of the Sjövarnskarens (RNVR). All launched in 1944.

17 COASTAL PATROL CRAFT

61-77

Displacement, tons: 28 standard
Dimensions, feet (metres): 69 × 15 × 5 *(21 × 4·6 × 1·5)*
Gun: 1—20 mm
Main engine: Diesel; speed = 18 knots

These are attached to the Coastal Artillery. "60" series launched in 1960-61 and "70" series in 1966-67.

Radar: One navigation set.

PATROL CRAFT 66 *1975, Royal Swedish Navy*

4 "V 01" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned (after reconstruction)*
SKANÖR	V 01	Kockums, Malmö	Dec 1976
SMYGE	V 02	Kockums, Malmö	1977
ARILD	V 03	Kockums, Malmö	1977
VIKEN	V 04	Kockums, Malmö	1977

Displacement, tons: 40 standard
Dimensions, feet (metres): 75·5 × 19·4 × 4·6 *(23 × 5·9 × 1·4)*
Gun: 1—40 mm Bofors
Rocket launcher: 1—12 rail 57 mm
Main engines: 3 diesels

These four craft were originally of the "T 42" class (T42-45) which commissioned in 1957. They were reconstructed at Karlskrona having their torpedo tubes removed and their petrol engines replaced by diesels.

SKANÖR *1976, Royal Swedish Navy*

MINE WARFARE FORCES

Note: The class of GRP minesweepers mentioned in previous editions has not yet been ordered. However in autumn 1980 it was announced that an order for the prototype would soon be placed. A continuing programme is then expected although the total number planned for this class is not known.

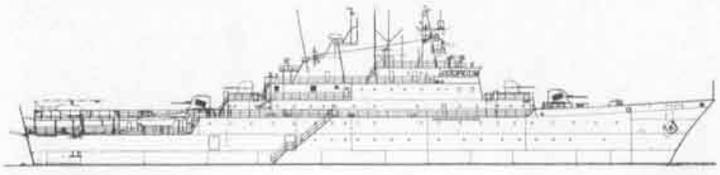
1 "CARLSKRONA" CLASS

Name	*No.*	*Builders*	*Commissioned*
CARLSKRONA	M 04	Karlskrona Varvet	late 1981

Displacement, tons: 3 130
Dimensions, feet (metres): 346·7 × 49·9 × 13·1 *(105·7 × 15·2 × 4)*
Guns: 2—57 mm (single); 2—40 mm (single)
Mines: Can lay 105
Main engines: 4—12-cyl Nohab F212V diesels; 10 344 hp = 20 knots
Complement: 50 plus 136 trainees

Ordered 25 November 1977, laid down in sections early 1980 and launched 28 June 1980 at the same time as Karlskrona celebrated its tercentenary. To relieve *Älvsnabben* as Cadet Training Ship as well as serving as a minelayer. Fitted with helicopter deck.

Radar: Navigation: Raytheon.



CARLSKRONA

ÄLVSNABBEN *1978, Commander Aldo Fraccaroli*

Note: A new construction coastal minelayer MUL 20 projected for Coast Artillery.

2 "ÄLVSBORG" CLASS (MINELAYERS)

Name	*No.*	*Builders*	*Commissioned*
ÄLVSBORG	M 02	Karlskrona Varvet	10 Apr 1971
VISBORG	M 03	Karlskrona Varvet	6 Feb 1976

Displacement, tons: 2 660 (M 02); 2 540 (M 03)
Dimensions, feet (metres): 301·8 × 48·2 × 13·2 *(92 × 14·7 × 4)*
Aircraft: 1 helicopter
Guns: 3—40 mm Bofors
Main engines: 2 Nohab-Polar 12-cyl diesels; 1 shaft; 4 200 bhp
Speed, knots: 16
Complement: 95 (accommodation for 205 submariners in M 02—158 admiral's staff in M 03)

Älvsborg was ordered in 1968 and launched on 11 November 1969.
Visborg, laid down on 16 October 1973 and launched 22 January 1975 also acts as Command Ship for C-in-C Coastal Fleet and submarine depot ship.

Fire control: M 20 Series.

VISBORG *1979, Royal Swedish Navy*

8 COASTAL MINELAYERS

MUL 12 (1952) **MUL 13** (1952) **MUL 14** (1953) **MUL 15** (1953) **MUL 16** (1956) **MUL 17** (1956) **MUL 18** (1956) **MUL 19** (1956)

Displacement, tons: 245 full load
Dimensions, feet (metres): 95·1 × 24·3 × 10·2 *(29 × 7·4 × 3·1)*
Gun: 1—40 mm
Main engines: 2 Nohab diesel-electric; 460 bhp = 10·5 knots

Launch dates in brackets. All completed by 1957. Operated by Coast Artillery.

Radar: One navigation set.

MUL 12 *1975, Royal Swedish Navy*

1 COASTAL MINELAYER

MUL 11

Displacement, tons: 200 full load
Dimensions, feet (metres): 88·6 × 23·6 × 11·8 *(27 × 7·2 × 3·6)*
Guns: 2—20 mm
Main engines: 2 Atlas diesels; 300 bhp = 10 knots

Launched in 1946. Operated by Coast Artillery.

Radar: One navigation set.

MUL 11 *1976, Royal Swedish Navy*

1 MINELAYER/TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
ÄLVSNABBEN	M 01	Eriksberg Mek Verkstads	8 May 1943

Displacement, tons: 4 250 standard
Dimensions, feet (metres): 334·7 × 44·6 × 16·4 *(102 × 13·6 × 5)*
Guns: 2—6 in *(152 mm);* 2—57 mm Bofors;
2—40 mm; 4—37 mm saluting
Main engines: Diesels; 1 shaft; 3 000 bhp
Speed, knots: 14
Complement: 255 (63 cadets)

Built on a mercantile hull. Laid down on 31 October 1942, launched on 19 January 1943. Employed as a training ship during 1953-58. Relieved the anti-aircraft cruiser *Gotland* as Cadets' sea-going training ship in 1959. Re-armed in 1961. Formerly carried four 6-in, eight 40 mm, six 20 mm. Her last cruise will be the 1980 cruise after which she is due to be relieved by *Carlskrona* and paid off for disposal in late 1981.

Radar: Search and target designator: Thomson CSF Saturn.
Fire control: M45 series.

16 SMALL MINELAYERS

501-516

Ordered in 1969. Of 15 tons and 14 knots with diesel engines. Mines are laid from single traps on either beam.

Radar: One navigation set.

SMALL MINELAYER 502 *1975, Royal Swedish Navy*

12 "ARKÖ" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
ARKÖ	M 57	Karlskrona Varvet	1958
SPÄRÖ	M 58	Hälsingborg	1958
KARLSÖ	M 59	Karlskrona Varvet	1958
IGGÖ	M 60	Hälsingborg	1961
STYRSÖ	M 61	Karlskrona Varvet	1962
SKAFTÖ	M 62	Hälsingborg	1962
ASPÖ	M 63	Karlskrona Varvet	1962
HASSLÖ	M 64	Hälsingborg	1962
VINÖ	M 65	Karlskrona Varvet	1962
VÄLLÖ	M 66	Hälsingborg	1963
NÄMDÖ	M 67	Karlskrona Varvet	1964
BLIDÖ	M 68	Hälsingborg	1964

Displacement, tons: 285 standard; 300 full load
Dimensions, feet (metres): 137·7 × 24·6 × 7·9 *(42 × 7·5 × 2·4)*
Gun: 1—40 mm/70
Main engines: 2 Mercedes-Benz (MTU 12V 493) diesels; 2 shafts; 1 600 bhp = 14·5 knots

Of wooden construction. There is a small difference in the deck-line between M 57-59 and M 60-68. *Arkö* was launched on 21 January 1957.

ARKÖ *1979, Royal Swedish Navy*

3 "M 47" CLASS (MINESWEEPERS—INSHORE)

GILLÖGA M 47 **RÖDLÖGA** M 48 **SVARTLÖGA** M 49

Details same as "M 43" class below. Built in 1964. Trawler type.

RÖDLÖGA *1976, Royal Swedish Navy*

4 "M 43" CLASS (MINESWEEPERS—INSHORE)

HISINGEN M 43 **DÄMMAN** M 45
BLACKAN M 44 **GALTEN** M 46

Displacement, tons: 140
Dimensions, feet (metres): 72·2 × 21 × 11·2 *(22× 6·4 × 3·4)*
Gun: 1—MG
Main engine: 1 diesel; 380 bhp = 9 knots

Built in 1960. Trawler type.

DÄMMAN *1979, L. and L. van Ginderen*

3 "M 31" CLASS (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
GÄSSTEN	M 31	Knippla Skeppsvarv	16 Nov 1973
NORSTEN	M 32	Hellevikstrands Skeppsvarv	12 Oct 1973
VIKSTEN	M 33	Karlskrona Varvet	1 July 1974

Displacement, tons: 120 standard; 135 full load
Dimensions, feet (metres): 79 × 21·7 × 12·2 *(24 × 6·6 × 3·7)*
Gun: 1—40 mm
Main engine: 1 diesel; 460 bhp = 11 knots

Ordered 1972. *Viksten,* built of GRP, as a forerunner to new minehunters to be built at Karlskrona. Others have wooden hulls. *Gässten* launched November 1972. *Norsten* April 1973, *Viksten* April 1974.

VIKSTEN *1975, Royal Swedish Navy*

8 "M 15" CLASS (MINESWEEPERS—INSHORE)

M 15 M 16 M 21 M 22 M 23 M 24 M 25 M 26

Displacement, tons: 70 standard
Dimensions, feet (metres): 85·3 × 16·5 × 4·5 *(26 × 5 × 1·4)*
Gun: 1—20 mm
Main engines: 2 diesels; 320-430 bhp = 12-13 knots

All launched in 1941. M 17, M 18 and M 20 of this class were re-rated as tenders and renamed *Lommen, Spoven* and *Skuld* respectively: see Tenders section.

M 25 *1975, Royal Swedish Navy*

2 MINE TRANSPORTS

FÄLLAREN A 236 **MINÖREN** A 237

Displacement, tons: 165 standard
Dimensions, feet (metres): 97 × 20·3 × 7·2 *(31·8 × 6·2 × 2·2)*
Main engines: 2 diesels; 1 shaft; 240 bhp = 9 knots

Launched in 1941 and 1940 respectively.

AMPHIBIOUS FORCES

3 LCMs

Name	*No.*	*Builders*	*Commissioned*
BORE	—	Åsigeverken	1967
GRIM	—	Åsigeverken	1962
HEIMDAL	—	Åsigeverken	1967

Displacement, tons: 340 full load
Dimensions, feet (metres): 118·1 × 27·9 × 8·5 *(36 × 8·5 × 2·6)*
Guns: 2—20 mm
Main engines: Diesels; 800 bhp = 12 knots

Launched in 1961 *(Grim)* and other two in 1966. Attached to Coastal Artillery.

BORE *1969, Royal Swedish Navy*

2 LCMs

Name	*No.*	*Builders*	*Commissioned*
SKAGUL	A 333	—	1960
SLEIPNER	A 335	—	1960

Displacement, tons: 335 standard
Dimensions, feet (metres): 114·8 × 27·9 × 9·5 *(35 × 8·5 × 2·9)*
Main engines: Diesels; 640 bhp = 10 knots

Sleipner was launched in 1959 and *Skagul* in 1960. Attached to Coastal Artillery.

4 "ANE" CLASS (LCMs)

ANE A 324 **BALDER** A 325 **LOKE** A 326 **RING** A 327

Displacement, tons: 135 standard
Dimensions, feet (metres): 91·9 × 26·2 × 6 *(28 × 8 × 1·8)*
Guns: 1—20 mm; 1 or 2 MGs
Main engines: Speed = 8·5 knots

Built in 1943-45. Attached to Coastal Artillery.

LOKE *1979, Royal Swedish Navy*

81 LCUs

Nos. 201-276 and 280-284

Displacement, tons: 31
Dimensions, feet (metres): 65·6 × 13·8 × 4·2 *(20 × 4·2 × 1·3)*
Guns: 2—6·5 mm MGs
Main engines: Diesels; 600 hp = 17 knots

"201" class (201-241) launched 1957-60; "242" class (242-255) built in 1971-73; "256" class (256-276); 256-263 completed 1975; 264-269 and 274-276 completed 1976; 270-273 completed 1977; "280" class (280-284) completed 1976-77.

LCU 227 ("201" Class) *1975, Royal Swedish Navy*

54 LCAs

337-354 of 6 tons and 21 knots. Built 1970-73.
332-336 of 5·4 tons and 25 knots. Built in 1967.
331 of 6 tons and 20 knots. Built in 1965.
301-330 of 4 tons and 9·5 knots. Built in 1956-59.

ICEBREAKERS

3 FINNISH "URHO" CLASS

Name	*No.*	*Builders*	*Commissioned*
ATLE	—	Wärtsilä, Helsinki	21 Oct 1974
FREJ	—	Wärtsilä, Helsinki	30 Sep 1975
YMER	—	Wärtsilä, Helsinki	25 Oct 1977

Displacement, tons: 7 900
Dimensions, feet (metres): 343·2 × 78·1 × 24 *(104·6 × 23·8 × 7·3)*
Aircraft: 1 helicopter
Main engines: 5 Wärtsilä-Pielstick diesels of 25 000 bhp; 4 Stromberg electric motors; 4 shafts (2 fwd, 2 aft); 22 000 shp = 18 knots
Complement: 54 (16 officers, 38 men)

Atle laid down 10 May 1973, launched 27 November 1973. *Frej* launched 3 June 1974. *Ymer* ordered 24 March 1975, laid down 12 February 1976 and launched 3 September 1976. Sister ships of Finnish "Urho" class.

YMER *1977, Wartsila*

Name	*No.*	*Builders*	*Commissioned*
NJORD	—	Wärtsilä, Helsinki	Dec 1969

Displacement, tons: 5 150 standard; 5 686 full load
Dimensions, feet (metres): 283·8 × 67·3 × 20·3 *(86·5 × 20·5 × 6·2)*
Main engines: Wärtsilä diesel-electric; 4 shafts (2 fwd, 2 aft); 12 000 hp = 18 knots

Launched on 20 October 1968. Near sister ship of *Tor*. Has deck-rings for four 40 mm guns.

NJORD *1979, Royal Swedish Navy*

Name	*No.*	*Builders*	*Commissioned*
TOR	—	Wärtsilä, Crichton-Vulcan Yard, Turku	31 Jan 1964

Displacement, tons: 4 980 standard; 5 290 full load
Dimensions, feet (metres): 277·2 × 67·3 × 20·3 *(84·5 × 20·5 × 6·2)*
Main engines: Wärtsilä-Sulzer diesel-electric; 4 shafts (2 fwd; 2 aft); 12 000 hp = 18 knots

Launched on 25 May 1963. Towed to Sandvikens Skeppsdocka, Helsingfors, for completion. Larger but generally similar to *Oden*, and a near sister to *Tarmo* built for Finland. Has deck-rings for four 40 mm guns.

TOR *1972, Royal Swedish Navy*

Name	*No.*	*Builders*	*Commissioned*
ALE	—	Wärtsilä, Helsinki	19 Dec 1973

Displacement, tons: 1 488
Dimensions, feet (metres): 150·9 × 42·6 × 16·4 *(46 × 13 × 5)*
Main engines: Diesels; 4 750 hp; 2 shafts = 14 knots
Complement: 28

Built for operations on Lake Vänern. Launched 1 June 1973. Also used for surveying.

Name	*No.*	*Builders*	*Commissioned*
THULE	—	Naval Dockyard, Karlskrona	1953

Displacement, tons: 2 200 standard; 2 280 full load
Dimensions, feet (metres): 187 × 52·8 × 19·4 *(57 × 16·1 × 5·9)*
Main engines: Diesel-electric; 3 shafts (1 fwd); 4 800 bhp = 14 knots
Complement: 43

Launched in October 1951.

Name	*No.*	*Builders*	*Commissioned*
ODEN	—	Sandviken, Helsingfors	1958

Displacement, tons: 4 950 standard; 5 220 full load
Dimensions, feet (metres): 255·9 × 63·7 × 22·7 *(78 × 19·4 × 6·9)*
Main engines: Diesel-electric; 4 shafts (2 fwd); 10 500 shp = 16 knots
Oil fuel, tons: 740
Complement: 75

Similar to the Finnish *Voima* before conversion and three Soviet icebreakers. Launched on 16 October 1956.

ODEN *1972, Royal Swedish Navy*

SURVEY SHIPS

(Owned by Ministry of Transport but manned and operated by the navy).

Note: See *Ale* in Icebreakers section.

JOHAN NORDENANKAR

Displacement, tons: 2 000
Dimensions, feet (metres): 239·5 × 45·9 × 12·2 *(73 × 14 × 3·8)*
Main engines: 2 diesels; 4 000 hp; 1 shaft = 15 knots
Complement: 59

Ordered from Falkenbergs Varvet and laid down 1977, launched 1 November 1979. Completion 1 July 1980.
Helicopter deck but no hangar. Carries eight survey boats.

JOHAN NORDENANKAR *1980, Maritime Defence*

JOHAN MÅNSSON

Displacement, tons: 977 standard; 1 030 full load
Dimensions, feet (metres): 183·7 × 36·1 × 11·5 *(56 × 11 × 3·5)*
Main engines: Diesels; 3 300 bhp = 15 knots
Complement: 85

Launched on 14 January 1966. Her surveying launches are lowered and recovered over a stern ramp.

JOHAN MÅNSSON *1975, Royal Swedish Navy*

GUSTAF AF KLINT

Displacement, tons: 750 standard
Dimensions, feet (metres): 170·6 × 36·2 × 15·4 *(52 × 11 × 4·7)*
Main engines: Diesels; 640 bhp = 10 knots
Complement: 66

Launched in 1941. Reconstructed in 1963. She formerly displaced 650 tons with a length of 154 ft *(47 m)*. To be paid off in 1980.

GUSTAF AF KLINT *1976, Royal Swedish Navy*

NILS STRÖMCRONA

Displacement, tons: 140 standard
Dimensions, feet (metres): 88·6 × 17 × 8·2 *(27 × 5·2 × 2·5)*
Guns: None in peacetime
Main engines: Diesels; 300 bhp = 9 knots
Complement: 14

Launched in 1894 and reconstructed in 1952.

NILS STRÖMCRONA *1976, Royal Swedish Navy*

RAN

Displacement, tons: 285 standard
Dimensions, feet (metres): 98·4 × 23 × 8·5 *(30 × 7 × 2·6)*
Main engines: Diesels; 260 bhp = 9 knots
Complement: 37

Ran was launched and commissioned in 1946.

ANDERS BURE (ex-*Rali*)

Displacement, tons: 54
Dimensions, feet (metres): 82 × 19·4 × 6·9 *(25 × 5·9 × 2·1)*
Main engines: Diesels = 15 knots
Complement: 11

Built in 1968 as *Rali*. She was purchased in 1971 and renamed.

ANDERS BURE *1976, Royal Swedish Navy*

SERVICE FORCES

1 SUPPLY SHIP

Name	*No.*	*Builders*	*Commissioned*
FREJA	A 221	Kroger, Rendsburg	1954

Displacement, tons: 415 standard; 465 full load
Dimensions, feet (metres): 160·8 × 27·9 × 12·1 *(49 × 8·5 × 3·7)*
Main engines: Diesels; 600 bhp = 11 knots

Launched in 1953. Employed as a provision ship.

1 SUPPORT TANKER

BRÄNNAREN A 228

Displacement, tons: 857
Dimensions, feet (metres): 203·4 × 28·2 × 12·1 *(62 × 8·6 × 3·7)*
Speed, knots: 11

Ex-West German merchant tanker *Indio* purchased early 1972. Built 1965.

BRÄNNAREN *1978, Reinhard Nerlich*

1 SALVAGE SHIP

Name	*No.*	*Builders*	*Commissioned*
BELOS	A 211	—	29 May 1963

Displacement, tons: 1 000 standard
Dimensions, feet (metres): 190·2 × 37 × 12 *(58 × 11·2 × 3·8)*
Aircraft: 1 helicopter
Main engines: Diesels; 2 shafts; 1 200 bhp = 13 knots

Launched on 15 November 1961. Equipped with decompression chamber.

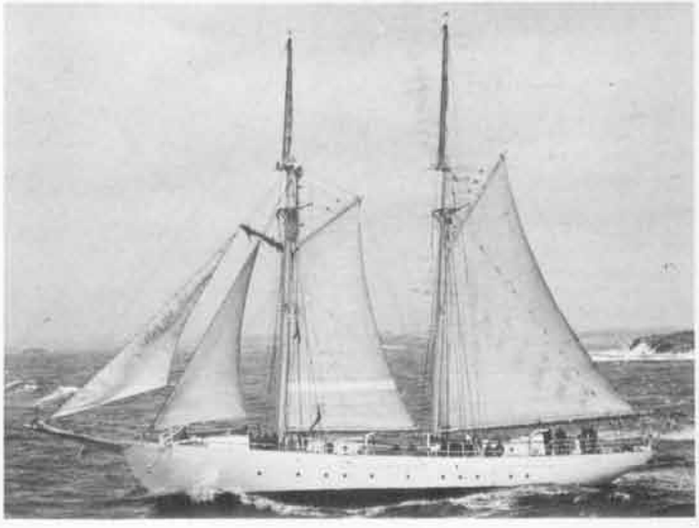
BELOS *1970, Royal Swedish Navy*

2 SAIL TRAINING SHIPS

Name	*No.*	*Builders*	*Commissioned*
GLADAN	S 01	—	1947
FALKEN	S 02	—	1948

Displacement, tons: 220 standard
Dimensions, feet (metres): 139·4 × 25·2 × 14·4 *(42·5 × 7·7 × 4·4)*
Main engine: Auxiliary diesel; 120 bhp

Sail training ships. Two masted schooners. Sail area 5 511 sq ft *(512 sq m)*.



GLADAN *1977, Royal Swedish Navy*

TENDERS

3 TRVs

Name	*No.*	*Builders*	*Commissioned*
PINGVINEN	A 248	Lundevarv-Ooverkstads AB, Kramfors	Mar 1975

Displacement, tons: 191
Dimensions, feet (metres): 108·2 × 20 × 6 *(33 × 6·1 × 1·8)*
Main engines: 2 diesels; 1 100 hp = 13 knots

Ordered 1972. Torpedo recovery and rocket trials ship. Launched 26 September 1973.

PINGVINEN *1976, Royal Swedish Navy*

Name	*No.*	*Builders*	*Commissioned*
PELIKANEN	A 247	—	26 Sep 1963

Displacement, tons: 130 standard
Dimensions, feet (metres): 108·2 × 19 × 6 *(33 × 5·8 × 1·8)*
Main engines: 2 Mercedes-Benz diesels; 1 040 bhp = 15 knots

Torpedo recovery and rocket trials vessel.

HÄGERN A 246

Displacement, tons: 50 standard
Dimensions, feet (metres): 95·1 × 17·7 × 5·2 *(29 × 5·4 × 1·6)*
Main engines: 2 diesels; 480 bhp = 10 knots

Launched in 1951.

5 "L 51" CLASS (LCUs)

L 51 **L 52** **L 53** **L 54** **L 55**

Displacement, tons: 32 standard
Dimensions, feet (metres): 45·9 × 15·7 × 3·3 *(14 × 4·8 × 1)*
Main engine: Diesel; 140 bhp = 7 knots

Launched in 1947-48.

5 TENDERS

SIGRUN A 256

Displacement, tons: 250 standard
Dimensions, feet (metres): 105 × 22·3 × 11·8 *(32 × 6·8 × 3·6)*
Main engines: Diesels: 320 bhp = 11 knots

Launched in 1961. Laundry ship.

URD (ex-*Capella*) A 241

Displacement, tons: 63 standard; 90 full load
Dimensions, feet (metres): 72·1 × 18·3 × 9·2 *(22 × 5·6 × 2·8)*
Main engines: Diesels: 200 bhp = 8 knots

Experimental vessel added to the official list in 1970. Launched in 1929.

LOMMEN (ex-*M 17*) A 231 **SKULD** (ex-*M 20*) A 242
SPOVEN (ex-*M 18*) A 232

Displacement, tons: 70 standard
Dimensions, feet (metres): 85·3 × 16·5 × 4·5 *(26 × 5 × 1·4)*
Main engines: 2 diesels; 410 bhp = 13 knots

Former inshore minesweepers of the "M 15" class. All launched in 1941.

4 ROTORK CRAFT

Three STW 412 and one STW 512.

TUGS

HERMES A 253 **HECTOR** A 321 **HEROS** A 322

Displacement, tons: 185 standard
Dimensions, feet (metres): 80·5 × 24·6 × 11·3 *(24·5 × 7·4 × 3·6)*
Main engines: Diesels; 600 bhp = 11 knots

Launched 1953-57. Icebreaking tugs.

HERCULES A 323 **HERA** A 324

Displacement, tons: 127 tons
Dimensions, feet (metres): 70·4 × 22·5 × 13·5 *(21·4 × 6·9 × 4·1)*
Main engines: Diesels; 615 bhp = 11·5 knots

Launched 1969 and 1971. Icebreaking tugs.

ACHILLES A 251 **AJAX** A 252

Displacement, tons: 450
Dimensions, feet (metres): 116·6 × 31·4 × 12·8 *(35·5 × 9·5 × 3·9)*
Main engine: Diesel; 1 650 bhp = 12 knots

Achilles was launched in 1962 and *Ajax* in 1963. Both are icebreaking tugs.

AJAX *5/1976, Reinhard Nerlich*

Also listed:
HEBE A326; **PASSOP** A327; **HENRIK** A329; **ATLAS** A330; **MÄRSGARN** A332; **VITSGARN** A336.

ATB 1 A341; **ATB 2** A342; **ATB 3** A343.

GRANATEN A345; **EDDA** A347; **GERDA** A349.

WATER CARRIERS

UNDEN A 216

Displacement, tons: 540 standard
Dimensions, feet (metres): 130·8 × 24·6 × 10·4 *(39·8 × 7·6 × 3·2)*
Main engines: Steam reciprocating; 225 ihp = 9 knots

Launched in 1946.

FRYKEN A 217

Displacement, tons: 307 standard
Dimensions, feet (metres): 113 × 20·2 × 9 *(34·4 × 6·1 × 2·9)*
Main engines: Diesels; 370 bhp = 10 knots

A naval construction water carrier. Launched in 1959 and completed in 1960.

FRYKEN *1976, Royal Swedish Navy*

COAST GUARD

Note: See Addenda for additional ships.

2 COAST GUARD CUTTERS

TV 171 **TV 172**

Displacement, tons: 280
Dimensions, feet (metres): 144 × 27·9 × 7·9 *(43·9 × 8·5 × 2·4)*
Gun: 1—20 mm (if required)
Main engines: 2 Hedemora V16A diesels; 4 500 hp = 20 knots
Complement: 14

Ordered from Karlskrona Varvet in 1978. First launched November 1979 and second in 1980. First completed 1980, second in 1981. With a GRP hull the same mould was used that is ready for new naval MCM vessels when ordered. This class has a larger superstructure than the planned MCMVs as well as a helicopter deck.

TV 171 *1980, Karlskrona Varvet*

5 COAST GUARD PATROL CRAFT

TV 103-107

Displacement, tons: 50
Dimensions, feet (metres): 87·6 × 16·5 × 3·6 *(26·7 × 5·2 × 1·1)*
Main engines: 2 diesels; 1 800 hp; 2 shafts = 25 knots
Range, miles: 1 000
Complement: 8 (accommodation for 16)

All welded aluminium hull and upperworks. Twin rudders. Equipped for salvage divers. Built since 1969 at Karlskrona.

Radar: One Navigational radar.

Sonar: One hull-mounted.

2 POLLUTION CONTROL CRAFT

MAJEKAR **T 04**

SWITZERLAND

Diplomatic Representation

Defence Attaché in London:
Brigadier General H. Maendli

Mercantile Marine

Lloyd's Register of Shipping:
35 vessels of 310 775 tons gross

PATROL CRAFT

Displacement, tons: 9
Dimensions, feet (metres): 38·4 × 10·2 × 3·3 *(11·7 × 3·1 × 1)*
Guns: 1—20 mm; 1 MG
Main engines: 2 Detroit diesels 8V-71T; 350 hp = 22·7 knots
Complement: 8

There are plans to build these new craft in the early 1980s as well as ten Type 80 craft of 5·9 tons, 35·1 ft *(10·7 m)* long with two Volvo/Penta diesels of 230 hp and a speed of 32·5 knots. The first class is to replace the ten elderly craft now being phased out which were built about 1942, one of which is illustrated here. The new craft have radio and radar equipment.

In addition to the above there are also water-transport detachments and other detachments with smaller patrol craft.

Swiss Patrol Craft *1979, Swiss Army*

SYRIA

Ministerial

Minister of Defence:
Major General Mustafa Tlass

Headquarters' Appointments

Commander-in-Chief Navy:
Commodore Fadl Husayn
Chief of Staff:
Commodore Mustafa Tayyare
Director of Naval Operations:
Commodore Muhammad Hamud

Personnel

(a) 1981: 2 500 officers and men
(b) 18 months' national service

Naval Aviation

6-10 Ka25 Hormone helicopters

Naval Plans

It is believed that Syria is planning to obtain extra frigates, probably from Western Europe.

Bases

Latakia, Baniyas, Tartous, Al-Mina-al-Bayda

Mercantile Marine

Lloyd's Register of Shipping:
44 vessels of 39 255 tons gross

FRIGATES

2 Ex-SOVIET "PETYA I" CLASS

12, 14

Displacement, tons: 950 standard; 1 100 full load
Dimensions, feet (metres): 270 × 29·9 × 10·5 *(82·3 × 9·1 × 3·2)*
Guns: 4—3 in *(76 mm)* (twin)
A/S weapons: 4—16-barrelled MBU; 2 DC racks
Torpedo tubes: 5—16 in *(406 mm)* (quin)
Main engines: 1 diesel; 6 000 hp; 2 gas-turbines; 30 000 hp; 3 shafts
Speed, knots: 35
Range, miles: 4 000 at 20 knots
Complement: 98

Transferred by the USSR in 1975-76.

Radar: Search: Slim Net.
Fire control: Hawk Screech.
Navigation: Don 2.
IFF: High Pole B and two Square Head.

Sonar: One hull-mounted.

"PETYA I" Class *3/1975, MOD*

LIGHT FORCES

6 Ex-SOVIET "OSA I" and 6 "OSA II" CLASSES
(FAST ATTACK CRAFT—MISSILE)

21-26 ("Osa I")

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (single launchers)
Guns: 4—30 mm (twins) (1 fwd, 1 aft)
Main engines: 3 M503A/504 diesels; 12 000 ("Osa I")/15 000 ("Osa II") bhp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Nine "Osa I" class originally transferred in 1966 and three sunk in October 1973 war. Two "Osa II" class transferred in 1978, two in October 1979 and two in November 1979. Some of the original group may be scheduled for disposal.

Radar: Search: Square Tie.
Fire control: Drum Tilt.
IFF: Two Square Head and High Pole.

Syrian "OSA I" Class *12/1972*

6 Ex-SOVIET "KOMAR" CLASS (FAST ATTACK CRAFT—MISSILE)

41-46

Displacement, tons: 68 standard; 75 full load
Dimensions, feet (metres): 87·9 × 20·3 × 4·9 *(26·8 × 6·2 × 1·5)*
Missiles: SSM; 2 SS-N-2 (single launchers)
Guns: 2—25 mm (twin)
Main engines: 4 M50 diesels; 4 shafts; 4 800 bhp = 40 knots
Range, miles: 400 at 30 knots
Complement: 19

Transferred between 1963 and 1966. Three reported lost in Israeli War October 1973, but were replaced.

Radar: Search: Square Tie.
IFF: Dead Duck and High Pole A.

"KOMAR" Class

8 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 22 standard; 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Torpedo tubes: 2—18 in *(457 mm)*
Guns: 2—14·5 mm MGs (twin)
Main engines: 2 diesels; 2 400 bhp; 2 shafts = 50 knots
Range, miles: 400 at 13 knots
Complement: 12

Five torpedo boats were transferred from the USSR at Latakia on 7 February 1957, and at least 12 subsequently. One reported lost in Israeli War October 1973. Four transferred to Egypt in 1970. Only eight of the remaining 12 considered operational.

Radar: Search: Skin Head.
IFF: Dead Duck, High Pole A.

3 Ex-FRENCH CH TYPE (LARGE PATROL CRAFT)

ABABEH IBN NEFEH **ABDULLAH IBN ARISSI** **TAREK IBN ZAYED**

Displacement, tons: 107 standard; 131 full load
Dimensions, feet (metres): 130·8 × 18·7 × 6·9 *(39·9 × 5·7 × 2·1)*
Guns: 2—20 mm
A/S weapons: DCs
Main engines: MAN diesels; 2 shafts; 1 130 bhp = 16 knots
Oil fuel, tons: 50
Range, miles: 1 200 at 8 knots; 680 at 13 knots
Complement: 28

All built in France, the first by AC de France and second pair by Seine Maritime. Completed in 1940. Rebuilt in 1955-56 when the funnels were removed. These were transferred in 1962 to form the nucleus of the Syrian Navy. Two of these ships are probably non-operational.

CH Type *M Henri Le Masson*

MINE WARFARE FORCES

1 Ex-SOVIET "T 43" CLASS (MINESWEEPER—OCEAN)

YARMOUK

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)*
Guns: 2—37 mm (twin); 2—25mm (twin)
Mines: Can carry 20
Main engines: 2 diesels; 2 shafts; 3 000 hp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Reported in 1962 to have been transferred from the Soviet Navy. The second of this class was sunk in the Israeli War October 1973.

Radar: Search: Ball End.
Navigation: Neptun.
IFF: Square Head and High Pole A.

2 Ex-SOVIET "VANYA" CLASS (MINESWEEPERS—COASTAL)

Displacement, tons: 200 standard; 245 full load
Dimensions, feet (metres): 131·2 × 23·9 × 5·9 *(40 × 7·3 × 1·8)*
Guns: 2—30 mm (twin)
Mines: Can carry 5
Main engines: 2 diesels; 2 200 bhp = 18 knots
Range, miles: 1 100 at 18 knots
Complement: 30

Transferred December 1972.

Radar: Navigation: Don 2.
IFF: Square Head and High Pole B.

1 Ex-SOVIET "YEVGENYA" CLASS (MINESWEEPER—INSHORE)

Displacement, tons: 70 standard; 80 full load
Dimensions, feet (metres): 79 × 16·4 × 3·9 *(24·1 × 5 × 1·2)*
Guns: 2—14·5 mm (twin)
Main engine: 1 diesel; 1 200 hp = 12 knots
Range, miles: 1 000 at 9 knots
Complement: 10

Transferred November 1978.

Radar: Navigation: Don 2.
IFF: High Pole.

MISCELLANEOUS

1 Ex-SOVIET "POLUCHAT" CLASS

Displacement, tons: 70 standard; 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 ×1·5)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 400 hp = 20 knots
Complement: 15

Used as divers' base-ship.

TAIWAN

Ministerial

Minister of National Defence:
Kao K'uei-yuan

Senior Flag Officers

Chief of the General Staff:
Admiral Soong Chang-chih
Commander-in-Chief:
Admiral Tsou Chien
Deputy Commanders-in-Chief:
Vice-Admiral Ho Chien Liu
Vice-Admiral Chih-shen Lin
Commander, Fleet Command:
Vice-Admiral Yi Lo
Commandant of Marine Corps:
Lieutenant-General Chang Lo
Chief of Staff:
Vice-Admiral Chang Yuan Yuan

Personnel

(a) 1981: 7 100 officers and 28 000 men in Navy, 3 000 officers and 26 000 men in Marine Corps (2 divisions with armour, APCs and heavy artillery)
(b) 3 years' conscript service

Bases

Tsoying: HQ First Naval District (Southern Taiwan, Pratas and Spratly) Main Base, HQ of Fleet Command and Marine Corps. Base of southern patrol and transport squadrons. Officers and ratings training, Naval Academy, Naval Shipyard.
Kaohsiung: Naval Shipyard.
Makung (Pescadores): HQ Second Naval District (Pescadores, Quemoy and Wu Ch'iu) Base for attack squadrons. Naval Shipyard and Training facilities.
Keelung: HQ Third Naval District (Northern Taiwan and Matsu group). Base of northern patrol and transport squadrons. Naval Shipyard.

Commands

C-in-C Fleet commands the Amphibious Forces (two landing ship squadrons and other elements), two destroyer squadrons, a patrol squadron, a mine warfare squadron and a logistic squadron. CTF 62 commands the northern and southern patrol and transport squadrons and the attack squadron.

Naval Aviation

A group of Air Force S-2E Tracker ASW aircraft are under Navy operational control.
The Marine Corps operates several observation aircraft and helicopters.
Twelve Hughes 500 MD helicopters (each with two A/S torpedoes) delivered to navy from August 1979.

Missiles

A missile called Hsiung Feng is used in the Taiwan navy. This is a Taiwanese version of the Israeli Gabriel missile.

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines (Patrol)	2	(2)
Destroyers	23	—
Frigates	10	—
Corvettes	3	—
Fast Attack Craft (Missile)	2	—
Fast Attack Craft (Torpedo)	9	—
Coastal Patrol Craft	10	—
Coastal Minesweepers	14	—
Minesweeping Boats	9	—
LSDs	2	—
Landing Ships	26	—
Utility Landing Craft	22	—
Repair Ship	1	—
Transports	2	—
Survey Vessels	4	—
Support Tankers	7	—
Cargo Ship	1	—
Tugs	11	—
Floating Docks	5	—
Service Craft	25	—
Customs	7+	—

General

The most modern of the major combatants of this navy is *Dang Yang*, a "Gearing" class destroyer which was first commissioned in 1947. With 35 ships and submarines in this bracket of antiquity it must be very soon that, if the Taiwanese fleet is to retain any credibility, replacements are put in hand. As this is not a navy with long-range commitments the ordering of corvettes with missile and helicopter facilities would seem logical. How such a programme will be affected by the changed attitudes of the USA and the People's Republic of China in Peking remains to be seen.

Mercantile Marine

Lloyd's Register of Shipping:
497 vessels of 2 039 123 tons gross

DELETIONS

Submarines

1974-75 3 SX404 small submarines

Destroyers

1975 *Lo Yang, Han Yang, Nan Yang* (ex-US "Benson" class) (all names transferred to later ships)
1976 *Hsien Yang* (sunk for film unit)

Frigates

1975 *Tai Hu* (ex-US "Cannon" class)
1976 *Heng Shan, Lung Shan* (APDs)
1978 *Kang Shan* (APD)

LST

1978 *Chung Chie*

Repair Ship

1974 *Tien Tai*

Survey Ship

1976 *Yang Ming*

Tanker

1975 *Kuichi*

Tugs

1975-76 YTLs 3, 8 and 10

Customs

1974 PC122

PENNANT LIST

As the pennant numbers in the Taiwan navy change frequently there is little advantage in listing them. It is reported that numbers changed again in 1980-81 so those provided in this section should be used with caution.

SUBMARINES

Note: Although agreement was reached with the Netherlands' government in late 1980 for the purchase of two "Walrus" class submarines to be built by Rotterdam Drydock Company this is being met by opposition in the Netherlands' parliament. It is now believed, however, that this programme will go ahead.

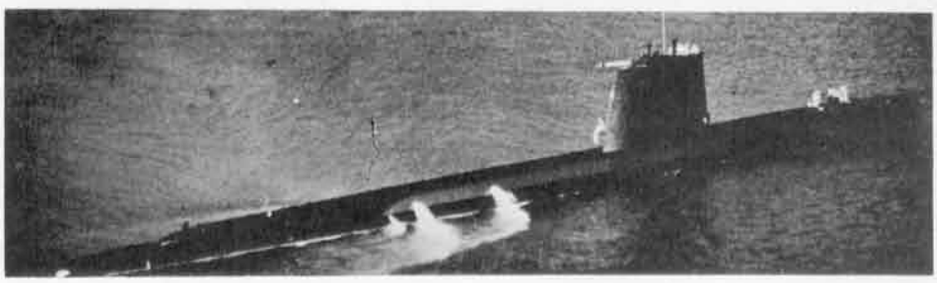
2 Ex-US GUPPY II TYPE

Name	*No.*	*Builders*	*Launched*	*Commissioned*
HAI SHIH (ex-USS *Cutlass*, SS 478)	736 (ex-SS 91)	Portsmouth Navy Yard	5 Nov 1944	17 Mar 1945
HAI PAO (ex-USS *Tusk*, SS 426)	794 (ex-SS 92)	Federal S.B. & D.D. Co, Kearney, New Jersey	8 July 1945	11 Apr 1946

Displacement, tons: 1 870 standard; 2 420 dived
Dimensions, feet (metres): 307·5 × 27·2 × 18 *(93·6 × 8·3 × 5·5)*
Torpedo tubes: 10—21 in *(533 mm)*; (6 fwd; 4 aft)
Main machinery: 3 diesels (Fairbanks-Morse); 4 800 bhp; 2 electric motors (Elliott); 5 400 shp; 2 shafts
Speed, knots: 18 surfaced; 15 dived
Complement: 81 (11 officers, 70 ratings)

Originally fleet-type submarines of the US Navy's "Tench" class; extensively modernised under the GUPPY II programme. These submarines each have four 126-cell electric batteries; fitted with snorkel.
Taiwan is the only nation in the Western Pacific currently to operate former US Navy submarines.

Torpedoes: A number of Italian torpedoes suitable for submarine operations were sold to Taiwan in 1976. The submarine torpedo-tubes, "sealed" by the US Navy must, therefore, have been "unsealed" in Taiwan and these submarines must be considered operational.



HAI SHIH *1972, USN*

Transfers: 736, 12 April 1973; 794, 18 October 1973.

DESTROYERS

11 Ex-US "GEARING (FRAM I and II)" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
KAI YANG (ex-USS *Richard B. Anderson,* DD 786)	915	Todd Pacific S.Y., Seattle, Washington	1945	7 July 1945	26 Oct 1945
CHIEN YANG (ex-USS *James E. Kyes,* DD 787)	921 (ex-DD 12)	Todd Pacific S.Y., Seattle, Washington	1945	4 Aug 1945	8 Feb 1946
TE YANG (ex-USS *Sarsfield,* DD 837)	925	Bath Iron Works Corporation	1945	27 May 1945	31 July 1945
SHEN YANG (ex-USS *Power,* DD 839)	932	Bath Iron Works Corporation	1945	30 June 1945	13 Sep 1945
LIAO YANG (ex-USS *Hanson,* DD 832)	938 (ex-DD 21)	Bath Iron Works Corporation	1944	11 Mar 1945	11 May 1945
DANG YANG (ex-USS *Lloyd Thomas,* DD 764) (FRAM II)	966 (ex-DD 11)	Bethlehem Steel, San Francisco	1945	5 Oct 1945	21 Mar 1947
HAN YANG (ex-USS *Herbert J. Thomas,* DD 833)	978 (ex-DD 15)	Bath Iron Works Corporation	1944	25 Mar 1945	29 May 1945
LAO YANG (ex-USS *Shelton,* DD 790)	981 (ex-DD 20)	Todd Pacific S.Y., Seattle, Washington	1945	8 Mar 1946	21 June 1946
LAI YANG (ex-USS *Leonard F. Mason,* DD 852)	—	Bethlehem (Quincy)	1945	4 Jan 1946	28 June 1946
— (ex-USS *Hamner,* DD 718)	—	Federal S.B. and D.D. Co	1945	24 Nov 1945	11 July 1946
— (ex-USS *Johnston,* DD 821)	—	Consolidated Steel Corporation	6 May 1945	19 Oct 1945	10 Oct 1946

Displacement, tons: 2 425 standard; approx 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Aircraft: 1 helicopter and hangar
Missiles: SSM; 3 Hsiung Feng
Guns: 4—5 in *(127 mm)*/38 (twin) (Mk 38); 4—40 mm (twins) several ·5 MGs fitted in some ships (see *Armament* note)
A/S weapons: ASROC 8-tube launcher except in *Dang Yang* and *Kai Yang*; *Dang Yang* has trainable Hedgehog (Mk 15); 6—(2 triple) Mk 32 A/S torpedo tubes
Main engines: 2 geared turbines (General Electric); 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 32·5
Range, miles: 5 800 at 15 knots
Complement: Approx 275

Liao Yang has twin 5-in gun mounts in "A" and "B" positions with A/S torpedo tubes alongside second funnel; other ships have the "A" and "Y" gun mounts with torpedo tubes in "B" position except *Dang Yang* has torpedo tubes between funnels.
Three of the FRAM I ships were initially scheduled for transfer to Spain; however, they were declined by Spain and allocated to Taiwan.

Armament: Hsiung Feng missiles are being fitted in this class as well as extra 40 mm guns. Until this is all completed armaments will vary.

Deletions: *Chao Yang* (ex-USS *Rowan* DD 782) (sold 10 June 1977) ran aground 22 August 1977 while in tow to Taiwan. Beyond salvage—stripped for spares.

Electronics: Most have ULQ-6 ECM and WLR-1 and WLR-3 passive warning receivers.

Radar: At time of transfer three of these ships had SPS 37 and SPS 10 search radar antennae on their tripod mast; *Dang Yang* had older SPS 6 and SPS 10 antennae; *Chien Yang* had SPS 40 and SPS 10. *Lao Yang* now has SPS 10 and SPS 29.

Sonar: SQS 23 except *Dang Yang* with SQS 29 series.

Transfers: *Dang Yang,* 12 Oct 1972; *Chien Yang,* 18 Apr 1973; *Han Yang,* 6 May 1974; *Lao Yang,* 18 Apr 1973; *Liao Yang,* 18 Apr 1973; *Kai Yang,* 10 June 1977 by sale; *Te Yang* and *Shen Yang,* 1 Oct 1977 by sale; *Lai Yang,* Jan 1978; ex-USS *Johnston* by sale March 1981; ex-USS *Hamner* Apr 1981.

LAO YANG *(Nan Yang* alongside*)* *1978, Michael D. J. Lennon*

1 Ex-US "GEARING (FRAM II)" CLASS RADAR PICKET

Name	No.	Builders	Laid down	Launched	Commissioned
FU YANG (ex-USS *Ernest G. Small,* DD 838)	963 (ex-DD 7)	Bath Iron Works Corporation	1945	14 June 1945	21 Aug 1945

Displacement, tons: 2 425 standard; approx 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Missiles: SSM; 3 Hsiung Feng
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38); 8—40 mm (twin); 4—5 MGs (single)
A/S weapons: 6 (2 triple) torpedo tubes (Mk 32); 2 fixed Hedgehogs
Main engines: 2 geared turbines; (General Electric); 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 32·5
Range, miles: 5 800 at 15 knots
Complement: approx 275

The 40 mm guns were installed after transfer to Taiwan.

Fire control: US Mk 25 and Mk 37; Taiwan built Mk 51 (adapted from F86 aircraft).

Radar: At time of transfer *Fu Yang* had SPS 37 and SPS 10 search radars on forward tripod mast, and large TACAN antenna on second tripod mast.

Sonar: SQS 29 (hull-mounted); SQS 10 (VDS).

Transfer: February 1971.

FU YANG (old pennant number)

8 Ex-US "ALLEN M. SUMNER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PO YANG (ex-USS *Maddox,* DD 731)	928 (ex-DD 10)	Bath Iron Works Corporation	1943	19 Mar 1944	2 June 1944
YUEN YANG (ex-USS *Haynsworth,* DD 700)	944 (ex-DD 5)	Federal S.B. & D.D. Co	1943	15 Apr 1944	22 June 1944
LO YANG (ex-USS *Taussig,* DD 746)	949 (ex-DD 14)	Bethlehem Steel, Staten Island	1943	25 Jan 1944	20 May 1944
NAN YANG (ex-USS *John W. Thomason,* DD 760)	954 (ex-DD 17)	Bethlehem Steel, San Francisco	1944	30 Sep 1944	11 Oct 1945
HUEI YANG (ex-USS *English,* DD 696)	972 (ex-DD 6)	Federal S.B. & D.D. Co	1943	27 Feb 1944	4 May 1944
HENG YANG (ex-USS *Samuel N. Moore,* DD 747)	976 (ex-DD 2)	Bethlehem Steel, Staten Island	1943	23 Feb 1944	24 June 1944
HSIANG YANG (ex-USS *Brush,* DD 745)	986 (ex-DD 1)	Bethlehem Steel, Staten Island	1943	28 Dec 1943	17 Apr 1944
HUA YANG (ex-USS *Bristol,* DD 857)	988 (ex-DD 3)	Bethlehem Steel, San Pedro	1944	29 Oct 1944	17 Mar 1945

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19
(114·8 × 12·4 × 5·8)
Missiles: SSM; Hsiung Feng as follows— 1 triple mounting in 988, 2 triple mountings in 944 annd 976
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38); 4—3 in *(76 mm)*/50 (2 twin); (1—3 in *(76mm)*/50 in 988, none in 944); some including 944 and 976, have 8—40 mm (1 quad, 2 twin); several ·50 MG (single) in most ships
A/S weapons: 6 (2 triple) A/S torpedo tubes (Mk 32); 2 fixed Hedgehogs; depth charges in some ships
Main engines: 2 geared turbines (General Electric or Westinghouse); 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Complement: Approx 275

These ships have not been modernised under the Fram programmes, but retain their original configurations with removal of original torpedo tubes, and 40 mm and 20 mm guns, and installation of improved electronic equipment. Secondary gun battery now varies; during the 1950s most of these ships were rearmed with six 3-in guns (two single alongside forward funnel and two twin amidships); number retained apparently varies from ship to ship, with some ships retaining original 40 mm guns. Tripod mast fitted.
Lo Yang and *Nan Yang* have names and numbers previously assigned to now deleted ex-US destroyers.

Fire control: US Mk 25, 37 and 51.

Radar: Surface search: SPS 6 and SPS 10 (928 has SPS 40 and SPS 10, 954 has SPS 37 and SPS 10 and 949 has SPS 10 and SPS 29).
Missile control: Selenia Orion RTN-10X in missile fitted ships.
Navigation: Mk 5 (TDS).

Transfers: *Hsiang Yang,* 9 Dec 1969; *Heng Yang,* Feb 1970; *Hua Yang,* 9 Dec 1969; *Yuen Yang,* 12 May 1970; *Huei Yang,* Sep 1970; *Po Yang,* 6 July 1972; *Lo Yang,* 6 May 1974; *Nan Yang,* 6 May 1974.

HSIANG YANG (old pennant number) *1971, USN*

HENG YANG (old pennant number) *"Ships of the World"*

4 Ex-US "FLETCHER" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KUN YANG (ex-USS *Yarnall,* DD 541)	934 (ex-DD 19)	Bethlehem Steel, San Francisco	1943	25 July 1943	30 Dec 1943
CHING YANG (ex-USS *Mullany,* DD 528)	947 (ex-DD 9)	Bethlehem Steel, San Francisco	1942	12 Oct 1942	23 Apr 1943
KWEI YANG (ex-USS *Twining,* DD 540)	956 (ex-DD 8)	Bethlehem Steel, San Francisco	1943	11 July 1943	1 Dec 1943
AN YANG (ex-USS *Kimberly,* DD 521)	997 (ex-DD 18)	Bethlehem Steel, Staten Island	1942	4 Feb 1943	22 May 1943

Displacement, tons: 2 100 standard; 3 050 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18
(114·8 × 12 × 5·5)
Missiles: SAM; Twin Sea Chaparral launcher above "X" 5 in mount (8 reloads)
Guns: 5—5 in *(127 mm)*/38 (single) except 4 guns in 947 (Mk 30); 5—3 in *(76 mm)*/50 in 947 and 956; 6—40 mm (twin) in 934 and 997
A/S weapons: 6 (2 triple) A/S torpedo tubes (Mk 32) in 947 and 956; 2 fixed Hedgehogs and depth charges in some ships
Torpedo tubes: 5—21 in *(533mm)* (quin) in 934
Main engines: 2 geared turbines (General Electric in 997, Allis Chalmers in 934, Westinghouse in others); 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 35
Range, miles: 6 000 at 15 knots
Complement: Approx 250

All now have tripod mast. Reportedly, *Kun Yang* has been fitted for minelaying.

Electronics: BLR 1 or SLR 2 passive detection.

Fire control: US Mk 25 and 37.

Radar: SPS 6 and 10 (ex-DD 8, 9, 19); SPS 10 and 12 (ex-DD 18).

Transfers: *Kwei Yang,* 6 Oct 1971 (sale); *Ching Yang,* 6 Oct 1971 (sale); *An Yang,* 2 June 1967; *Kun Yang,* 10 June 1968. Last pair purchased Jan 1974.

KUN YANG (five main guns) (old pennant number) *C. B. Mulholland*

FRIGATES

9 Ex-US "CHARLES LAWRENCE" and "CROSLEY" CLASSES

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TIEN SHAN (ex-USS *Kleinsmith,* APD 134/DE 718)	615 (ex-APD 315)	Defoe S.B. Co, Bay City, Michigan	1944	27 Jan 1945	12 June 1945
LU SHAN (ex-USS *Bull,* APD 78/DE 693)	821 (ex-PF 36)	Defoe S.B. Co, Bay City, Michigan	1942	25 Mar 1943	12 Aug 1943
YU SHAN (ex-USS *Kinzer,* APD 91/DE 232)	826 (ex-PF 32)	Charleston Navy Yard, South Carolina	1943	9 Dec 1943	1 Nov 1944
WEN SHAN (ex-USS *Gantner,* APD 42/DE 60)	834 (ex-PF 34)	Bethlehem S.B. Co, Higham, Mass	1942	17 Apr 1943	23 July 1943
FU SHAN (ex-USS *Truxton,* APD 98/DE 282)	835 (ex-PF 35)	Charleston Navy Yard, South Carolina	1943	9 Mar 1944	9 July 1944
CHUNG SHAN (ex-USS *Blessman,* APD 48/DE 69)	845 (ex-PF 43)	Bethlehem S.B. Co, Higham, Mass	1943	19 June 1943	19 Sep 1943
HUA SHAN (ex-USS *Donald W. Wolf,* APD 129/DE 713)	854 (ex-PF 33)	Defoe S.B. Co, Bay City, Michigan	1944	22 July 1944	13 Apr 1945
TAI SHAN (ex-USS *Register,* APD 92/DE 233)	878 (ex-PF 38)	Charleston Navy Yard, South Carolina	1943	20 Jan 1944	11 Jan 1945
SHOU SHAN (ex-USS *Kline,* APD 120/DE 687)	893 (ex-PF 37)	Bethlehem, Quincy, Mass	1944	27 June 1944	18 Oct 1944

Displacement, tons: 1 400 standard; 2 130 full load
Dimensions, feet (metres): 306 × 37 × 12·6 *(93·3 × 11·3 × 3·8)*
Guns: 2—5 in *(127 mm)*/38 Mk 30; 6—40 mm (twin); 4—20 mm (single) except 854 and possibly others have 8 guns (twin mounts)
A/S weapons: 6—12·75 in *(324 mm)* torpedo tubes (Mk 32 triple) except some have two Hedgehogs; depth charges
Main engines: Geared turbines (General Electric) with electric drive; 12 000 shp; 2 shafts
Boilers: 2 Foster-Wheeler
Speed, knots: 23·6
Range, miles: 5 000 at 15 knots
Complement: 200

All begun as destroyer escorts (DE), but converted during construction or after completion to high speed transports carrying 160 troops, commandoes, or frogmen.
The ex-USS *Walter B Cobb* (APD 106/DE 596) transferred to Taiwan in 1966 was lost at sea while under tow to Taiwan; replaced by ex-USS *Bull.*

Appearance: "Charles Lawrence" (APD 37-86) class has high bridge; "Crosley" class (APD 87 and above) has low bridge. Radars and fire control equipment vary. Davits amidships can hold four LCVP-type landing craft but ships usually carry only one each.

Fire control: Most have US Mk 26 Mod 4.

Guns: All ships are now believed to have been refitted with a second 5-in gun aft. One twin 40 mm gun mount is forward of bridge and two twin mounts are amidships.

Radar: Most have SPS 5. Some have Decca 707 in addition.

Transfers: 826, Apr 1962; 854, May 1965; 834, May 1966; 838, Mar 1966; 821, Aug 1966; 893, Mar 1966; 878, Oct 1966; 845, July 1967; 615, June 1967.

HUA SHAN (old pennant number) *C. B. Mulholland*

1 Ex-US "RUDDEROW" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TAI YUAN (ex-USS *Riley,* DE 579)	959 (ex-PF 27)	Bethlehem Steel Co, Higham, Mass	1943	29 Dec 1943	13 Mar 1944

Displacement, tons: 1 450 standard; approx 2 000 full load
Dimensions, feet (metres): 306 × 37 × 14 *(93·3 × 11·3 × 4·3)*
Guns: 2—5 in *(127 mm)*/38 (single) Mk 30; 4—40 mm (twin); 4—20 mm (single)
A/S weapons: 6—(2 triple) A/S torpedo tubes (Mk 32); 1 Hedgehog; depth charges
Main engines: Geared turbines (General Electric) with electric drive; 12 000 shp; 2 shafts
Boilers: 2 Foster-Wheeler
Speed, knots: 24
Range, miles: 5 000 at 15 knots
Complement: Approx 200

Refitted with tripod mast and platforms before bridge for 20 mm guns. (Hedgehog is on main deck, behind forward 5-in mount). Fitted for minelaying.
Designation changed from DE to PF in 1975.

Radar: SPS 6 and 10.

Transfer: 10 July 1968; sale March 1974.

TAI YUAN (old pennant number) *C. B. Mulholland*

CORVETTES

3 Ex-US "AUK" CLASS

Name	*No.*	*Builders*	*Commissioned*
PING JIN (ex-USS *Steady,* MSF 118)	867 (ex-PCE 70)	American S.B. Co, Cleveland, Ohio	16 Nov 1942
WU SHENG (ex-USS *Redstart,* MSF 378)	884 (ex-PCE 66)	Savannah Machine & Foundry Co, Georgia	4 Apr 1945
CHU YUNG (ex-USS *Waxwing,* MSF 389)	896 (ex-PCE 67)	American S.B. Co, Cleveland, Ohio	6 Aug 1945

Displacement, tons: 890 standard; 1 250 full load
Dimensions, feet (metres): 221·2 × 32·2 × 10·8 *(67·4 × 9·8 × 3·3)*
Guns: 2—3 in *(76 mm)*/50 (single); 4—40 mm (twin); 4—20 mm (twin)
A/S weapons: 1 Hedgehog; 3—12·75 in *(324 mm)* torpedo tubes (Mk 32 triple); depth charges
Mines: Mine-rails fitted in *Chu Yung* (1975)
Main engines: Diesel-electric (General Motors diesels); 7 060 bhp; 2 shafts = 18 knots
Complement: 80

Minesweeping equipment removed and second 3-in gun fitted aft in Taiwan service. One fitted for minelaying.

Transfers: 884, July 1965; 896, November 1965; 867, March 1968.

WU SHENG (old pennant number)

LIGHT FORCES

2 FAST ATTACK CRAFT (MISSILE)

LUNG CHIANG PGG 581 — PGG 582

Displacement, tons: 240 standard; 270 full load
Dimensions, feet (metres): 164·5 × 23·1 × 7·5 *(50·2 × 7·6 × 2·3)*
Missiles: SSM; 4 Hsiung Feng (single launchers) (see note)
Guns: 1—76 mm OTO Melara; 2—30 mm (Emerson) (twin); 2—5 MGs
Main engines: CODAG; 3 Avco Lycoming gas turbines; 13 800 shp (15 000 max); 3 diesels; 2 880 shp; 3 shafts (cp propellers)
Speed, knots: 20 knots (diesels); 40 knots (gas turbines)
Range, miles: 2 700 at 12 knots (1 diesel); 1 900 at 20 knots (3 diesels); 700 at 40 knots (3 gas turbines)
Complement: 34 (5 officers, 29 ratings)

Ordered from Tacoma Boatbuilding Co Inc, Washington, USA. The first built at Tacoma, the second by China Shipbuilding Corp, Kaohsiung, Taiwan and completed early 1979. Designated Patrol Ship Multi-Mission Mk 5 (PSMM Mk 5). Originally to be a class of 15 but 13 cancelled and to be replaced by Taiwan-designed patrol craft (see below). This cancellation is reported as due to non-availability of American or Italian missiles.

Fire control: NA 10 Mod 0 GFCS with Selenia RAN 11 L/X and IPN 10.

PSMM Mk 5

2 + ? FAST ATTACK CRAFT (MISSILE)

Displacement, tons: 50 approx
Dimensions, feet (metres): 70 × 18 × 3·3 *(21·3 × 5·5 × 1)* approx
Missiles: SSM; 2 Hsiung Feng (single)
Main engines: 2 diesels = 35 knots

A Taiwan designed patrol craft first produced in 1980.

TAIWAN DESIGN *1980*

2 TYPE FAST ATTACK CRAFT (TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
FU KUO	PTC 34	Hutchins Yacht Corporation, Jacksonville, Florida	—
TIAN KUO	PTC 35	Hutchins Yacht Corporation, Jacksonville, Florida	—

Displacement, tons: 46 light; 53 full load
Dimensions, feet (metres): 79 × 23·25 × 5·5 *(24·1 × 7·1 × 1·7)*
Guns: 1—40 mm; 2—5 MGs (single)
Torpedo launchers: 2
Main engines: 3 petrol engines; 3 shafts = 39 knots max; 32 knots cruising
Complement: 12

Transferred to Taiwan on 1 September 1957.

2 FAST ATTACK CRAFT (TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
FAN KONG	PTC 32	Annapolis Yacht Yard, Annapolis, Maryland	—
SAO TANG	PTC 33	Annapolis Yacht Yard, Annapolis, Maryland	—

Displacement, tons: 39 light; 46 full load
Dimensions, feet (metres): 71 × 19 × 5 *(21·6 × 5·8 × 1·5)*
Guns: 1—20 mm; 4—5 MGs (twin)
Torpedo launchers: 2 (?)
Main engines: 3 petrol engines; 3 shafts = 42 knots max; 32 knots cruising
Complement: 12

Transferred to Taiwan on 19 August 1957 and 1 November 1957, respectively.

2 JAPANESE TYPE (FAST ATTACK CRAFT—TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
FUH CHOW	PT 1	Mitsubishi S.B. Co	—
HSUEH CHIH	PT 2	Mitsubishi S.B. Co	—

Displacement, tons: 33 light; 40 full load
Dimensions, feet (metres): 69 × 19·9 *(24·1 × 6·1)*
Guns: 1—40 mm; 2—20 mm (twin)
Torpedo launchers: 2—18 in *(457 mm)*
Main engines: 3 petrol engines; 3 shafts = 40 knots max; 27 knots cruising
Complement: 12

Transferred to Taiwan on 1 June 1957 and 6 November 1957, respectively.

Note: At least three additional fast attack craft (torpedo) are known to be in service; details are not available.

FUH CHOW (forward 40 mm unshipped)

10 COASTAL PATROL CRAFT

Displacement, tons: Approx 30 tons
Gun: 1—40 mm

Small patrol boats designated PB. Constructed in Taiwan with the first of a reported ten units completed about 1971. These are believed the first warships of indigenous Taiwan construction.

PB 1

? HARBOUR DEFENCE MOTOR LAUNCHES

Of HDML-5 type. Currently used in harbour approaches.

MINE WARFARE FORCES

14 US "ADJUTANT" and "MSC 268" CLASSES (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
YUNG PING (ex-US *MSC 140*)	— (ex-MSC 155)	USA	June 1955
YUNG CHOU (ex-US *MSC 278*)	423 (ex-MSC 158)	USA	July 1959
YUNG CHING (ex-*Eekloo*, ex-US *MSC 101*)	432 (ex-MSC 163)	USA	1955
YUNG CHENG (ex-*Maaseick*, ex-US *MSC 78*)	441 (ex-MSC 165)	USA	1955
YUNG AN (ex-US *MSC 123*)	449 (ex-MSC 156)	USA	June 1955
YUNG JU (ex-US *MSC 300*)	457 (ex-MSC 160)	USA	Apr 1965
YUNG SUI (ex-*Diksmude*, ex-US *MSC 65*)	462 (ex-MSC 168)	USA	1954
YUNG LO (ex-US *MSC 306*)	469 (ex-MSC 161)	USA	June 1960
YUNG SHAN (ex-*Lier*, ex-US *MSC 63*)	476 (ex-MSC 164)	USA	1954
YUNG NIEN (ex-US *MSC 277*)	479 (ex-MSC 157)	USA	Dec 1958
YUNG FU (ex-*Diest*, ex-USS *Macaw* MSC 77)	482 (ex-MSC 162)	USA	1953
YUNG JEN (ex-*St Nicholas*, ex-US *MSC 64*)	485 (ex-MSC 167)	USA	1953
YUNG HSIN (ex-US *MSC 302*)	488 (ex-MSC 159)	USA	Mar 1965
YUNG CHI (ex-*Charleroi*, ex-US *MSC 152*)	497 (ex-MSC 166)	USA	1955

Displacement, tons: 375 full load
Dimensions, feet (metres): 144 × 27·9 × 8 *(43·9 × 8·5 × 2·4)*
Guns: 2—20 mm (twin)
Main engines: 2 General Motors diesels; 2 shafts; 1 200 bhp = 13 knots
Range, miles: 2 500 at 12 knots
Complement: 35

Non-magnetic, wood-hulled minesweepers built in the USA specifically for transfer to allied navies.
All are of similar design; the ex-Belgian ships have a small boom aft on a pole mast. They carried a single 40 mm gun forward in Belgian service.

Transfers: Seven listed above transferred to Taiwan upon completion in 1955-65. Seven originally built for Belgium and transferred to Taiwan November 1969. *De Panne* (ex-US *MSC 131*) was also transferred but has been stripped for spares.

YUNG CHI (pole mast aft) (old pennant number) *1972*

YUNG CHOU (no pole mast aft) (old pennant number)

1 MINESWEEPING BOAT

MSB 12 (ex-US *MSB 4*)

Dimensions, feet (metres): 57·1 × 15·1 × 3·9 *(17·4 × 4·6 × 1·2)*
Main engines: 2 diesels; 1 200 hp = 12 knots
Complement: 6

Former US Army minesweeping boat; assigned hull number MSB 4 in US Navy and transferred to Taiwan in December 1961. Navigation radar.

8 MINESWEEPING LAUNCHES

MSML 1	**MSML 5**	**MSML 7**	**MSML 11**
MSML 3	**MSML 6**	**MSML 8**	**MSML 12**

These 50 ft minesweeping launches built in the USA were transferred to Taiwan in March 1961.

AMPHIBIOUS FORCES

1 Ex-US "ASHLAND" CLASS (LSD)

Name	*No.*	*Builders*	*Commissioned*
CHUNG CHENG (ex-*Tung Hai*, ex-USS *White Marsh*, LSD 8)	LSD 639 (ex-LSD 191)	Moore Dry Dock Co, Oakland, California	2 July 1945

Displacement, tons: 4 790 standard; 9 078 full load
Dimensions, feet (metres): 457·8 × 72·2 × 18 *(139·6 × 22 × 5·5)*
Guns: 12—40 mm (2 quad and 2 twin)
Main engines: Skinner Unaflow; 7 400 ihp; 2 shafts = 15 knots
Boilers: 2

Launched on 19 July 1943. Converted to serve as parent ship for landing craft and coastal craft. Transferred from the US Navy to Taiwan on 17 November 1960. Purchased May 1976.

CHUNG CHENG (as LSD 191)

1 Ex-US "CABILDO" CLASS (LSD)

Name	*No.*	*Builders*	*Commissioned*
CHENG HAI (Ex-USS *Fort Marion*, LSD 22)	618	Gulf S.B. Co, Chickasaw, Alabama	29 Jan 1946

Displacement, tons: 4 790 standard; 9 078 full load
Dimensions, feet (metres): 457·8 × 72·2 × 18 *(139·6 × 22 × 5·5)*
Guns: 12—40 mm (2 quad and 2 twin)
Main engines: Geared turbines; 7 000 shp; 2 shafts = 15·4 knots
Boilers: 2
Range, miles: 8 000 at 15 knots
Complement: 316

Launched on 22 May 1945 and transferred to Taiwan on 15 April 1977.
Docking well is 392 × 44 ft; can accommodate three LCUs or 18 LCMs or 32 LVTs (amphibious tractors) in docking well. Fitted with helicopter platform over well.

Electronics: UPX 12 IFF.

Fire control: US Mk 26 Mod 4.

Radar: SPS 5.

"CABILDO" Class *1965, USN*

21 Ex-US "LST 1-510" and "511-1152" CLASSES

Name	*No.* (see note)
CHUNG FU (ex-USS *Iron County*, LST 840)	619 (ex-223)
CHUNG SHUN (ex-USS *LST 732*)	624 (ex-208)
CHUNG CHI (ex-USS *LST 1017*)	626 (ex-206)
CHUNG PANG (ex-USS *LST 578*)	629 (ex-230)
CHUNG CHIANG (ex-USS *San Bernardino County*, LST 1110)	635 (ex-225)
CHUNG SHU (ex-USS *LST 520*)	642 (ex-228)
CHUNG KUANG (ex-USS *LST 503*)	646 (ex-216)
CHUNG CHUAN (ex-*LST 1030*)	651 (ex-221)
CHUNG WAN (ex-USS *LST 535*)	654 (ex-229)
CHUNG CHIH (ex-USS *Sagadahoc County*, LST 1091)	655 (ex-226)
CHUNG YUNG (ex-USS *LST 574*)	657 (ex-210)
CHUNG SUO (ex-USS *Bradley County*, LST 400)	667 (ex-217)
CHUNG TING (ex-USS *LST 537*)	673 (ex-203)
CHUNG CHENG (ex-USS *Lafayette County*, LST 859)	676 (ex-224)
CHUNG CHIEN (ex-USS *LST 716*)	679 (ex-205)
CHUNG MING (ex-USS *Sweetwater County*, LST 1152)	681 (ex-227)
CHUNG HSING (ex-USS *LST 557*)	684 (ex-204)
CHUNG SHENG (ex-*LST 211*, ex-USS *LSTH 1033*)	686 (ex-222)
CHUNG LIEN (ex-USS *LST 1050*)	691 (ex-209)
CHUNG HAI (ex-USS *LST 755*)	697 (ex-201)
CHUNG YEH (ex-USS *Sublette County*, LST 1144)	699 (ex-231)

Displacement, tons: 1 653 standard; 4 080 full load (3 640 "1-510" class)
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: Varies; up to 10—40 mm (2 twin, 6 single) with some modernised ships rearmed with 2—3 in (single) and 6—40 mm (twin); several 20 mm (twin or single)
Main engines: 2 General Motors diesels; 1 700 bhp; 2 shafts = 11·6 knots
Complement: Varies: 100 to 125 in most ships

Constructed during World War II. These ships have been rebuilt in Taiwan.

Appearance: Some have davits forward and aft.

Electronics: Some have UPX 5 or 12 IFF.

Pennant numbers: In 1981 six of these ships were observed with pennant numbers 201, 206, 209, 216, 221, 222. Apparently the second major change in two years has taken place, apparently back to the old numbering.

Radar: US SO 1, 2 or 8.

Transfers: Original 201-208, 1946; 209 and 222, 1947; 228, 1948; 217, 223-230, 1958; 210, 1959; 216 and 218, 1960; 231, 1961.

CHUNG SHUN (old pennant number)

1 Ex-US "LST 511-1152" CLASS (FLAGSHIP) (AGC)

Name	*No.*	*Builders*	*Commissioned*
KAO HSIUNG (ex-*Chung Hai*, LST 219, ex-USS *Dukes County*, LST 735)	AGC 663	Dravo Corporation, Neville Island, Penn	26 Apr 1944

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: Several 40 mm (twin)
Main engines: 2 General Motors diesels; 1 700 bhp; 2 shafts = 11·6 knots

Launched on 11 March 1944. Transferred to Taiwan in May 1957 for service as an LST. Converted to a flagship for amphibious operations and renamed and redesignated (AGC) in 1964. Purchased November 1974.
Note lattice mast above bridge structure, modified bridge levels, and antenna mountings on main deck.

KAO HSIUNG (old pennant number) *1972*

4 Ex-US "LSM 1" CLASS

Name	*No.*
MEI LO (ex-USS *LSM 362*)	637 (ex-LSM 356)
MEI TSENG (ex-USS *LSM 431*)	649 (ex-LSM 341)
MEI PING (ex-USS *LSM 471*)	659 (ex-LSM 353)
MEI SUNG (ex-USS *LSM 457*)	694 (ex-LSM 347)

Displacement, tons: 1 095 full load
Dimensions, feet (metres): 203·5 × 34·2 × 8·3 *(62·1 × 10·4 × 2·5)*
Guns: 2—40 mm (twin); 4 or 8—20 mm (4 single or 4 twin)
Main engines: Diesels; 3 600 bhp; 2 shafts = 13 knots
Complement: 65 to 75

Constructed during World War II. Rebuilt in Taiwan.

Radar: Surface search: SO 8.

Transfers: 649 and 694 1946; 659, 1956; 637, 1962.

MEI TSENG (old pennant number) *1970*

22 Ex-US "LCU 501" and "LCU 1466" CLASSES

Name	*No.*	*Name*	*No.*
HO CHUN (ex-*LCU 892*)	— (ex-481)	**HO SHUN** (ex-*LCU 1225*)	— (ex-494)
HO TSUNG (ex-*LCU 1213*)	— (ex-482)	**HO YUNG** (ex-*LCU 1271*)	— (ex-495)
HO CHUNG (ex-*LCU 849*)	— (ex-484)	**HO CHIEN** (ex-*LCU 1278*)	— (ex-496)
HO CHANG (ex-*LCU 512*)	— (ex-485)	**HO CHI** (ex-*LCU 1212*)	— (ex-401)
HO CHENG (ex-*LCU 1145*)	— (ex-486)	**HO HOEI** (ex-*LCU 1218*)	— (ex-402)
HO SHAN (ex-*LCU 1596*)	— (ex-488)	**HO YAO** (ex-*LCU 1244*)	— (ex-403)
HO CHUAN (ex-*LCU 1597*)	— (ex-489)	**HO DENG** (ex-*LCU 1367*)	— (ex-404)
HO SENG (ex-*LCU 1598*)	— (ex-490)	**HO FENG** (ex-*LCU 1397*)	— (ex-405)
HO MENG (ex-*LCU 1599*)	— (ex-491)	**HO CHAO** (ex-*LCU 1429*)	— (ex-406)
HO MOU (ex-*LCU 1600*)	— (ex-492)	**HO TENG** (ex-*LCU 1452*)	— (ex-407)
HO SHOU (ex-*LCU 1601*)	— (ex-493)	**HO CHIE** (ex-*LCU 700*)	— (ex-SB1)

"LCU 501" Class

Displacement, tons: 158 light; 309 full load
Dimensions, feet (metres): 119 × 32·7 × 5 *(36·3 × 10 × 1·5)*
Guns: 2—20 mm (single); some units also may have 2—5 MGs
Main engines: 3 diesels; 675 bhp; 3 shafts = 10 knots
Complement: 10 to 25

"LCU 1466" Class

Displacement, tons: 180 light; 360 full load
Dimensions, feet (metres): 119 × 34 × 6 *(36·3 × 10·4 × 1·8)*
Guns: 3—20 mm (single); some units may also have 2—5 MGs
Main engines: 3 diesels; 675 bhp; 3 shafts = 10 knots
Complement: 15 to 25

The LCU 501 series were built in the USA during World War II; initially designated LCT(6) series. The six of LCU 1466 series built by Ishikawajima Heavy Industries Co, Tokyo, Japan, for transfer to Taiwan; completed in March 1955. All originally numbered in 200-series; subsequently changed to 400-series.

Transfers: 401-407: November/December 1959 (acquired outright 3 April 1978). SB1, 494-496: January/February 1958. Remainder: 1946-48.

SURVEY SHIPS

1 Ex-US C1-M-AV1 TYPE

Name	*No.*	*Builders*	*Commissioned*
CHIU HUA (ex-USNS *Sgt. George D. Keathley*, T-AGS 35, ex-T-APC 117)	AGS 398	Walter Butler S.Y., Duluth	1945

Displacement, tons: 6 090 tons
Dimensions, feet (metres): 338·8 × 50·3 × 17·5 *(103·3 × 15·3 × 5·3)*
Guns: 1—40 mm; 2—20 mm
Main engine: Diesel; 1 750 bhp; 1 shaft = 11·5 knots
Complement: 72

Built in 1945 as merchant ship *Acorn Knot*. Transferred to US Army 1949. Refitted for oceanographic survey work in 1966-67 and redesignated T-AGS 35. Transferred to Taiwan on 29 March 1972 and by sale 19 May 1976.

1 Ex-US "LSIL 351" CLASS

Name	*No.*	*Builders*	*Commissioned*
LIEN CHANG (ex-USS *LSIL 1017*)	AGSC 466	Albina Engineering & Machinery Works, Portland, Oregon	12 Apr 1944

Displacement, tons: 387 full load
Dimensions, feet (metres): 157 × 23·6 × 5·6 *(47·9 × 7·2 × 1·7)*
Guns: 2—40 mm (twin); several 20 mm
Main engines: 2 General Motors diesels; 1 320 bhp; 2 shafts = 14 knots

Launched on 14 March 1944. Transferred to Taiwan in March 1958. Employed as surveying ship; retains basic LSIL appearance.

1 SURVEY SHIP

WU KANG

Of 907 tons, launched 1943. Complement 59.

1 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
CHIU LIEN (ex-USS *Geronimo*, ATA 207)	AGS 563	Gulfport Boiler & Welding Works, Port Arthur, Texas	1 Mar 1945

Displacement, tons: 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Main engine: Diesel-electric (General Motors); 1 500 bhp; 1 shaft = 13 knots

Former US Navy auxiliary tug. Launched 4 January 1945. Transferred to Taiwan in February 1969 and converted to surveying ship. Currently employed as research ship for the Institute of Oceanology. Civilian manned. Painted white.

CHIU LIEN

SERVICE FORCES

Note: Transfer of AO 43 pending from USA.

1 Ex-US "AMPHION" CLASS (REPAIR SHIP)

Name	*No.*	*Builders*	*Commissioned*
YUN TAI (ex-USS *Cadmus*, AR 14)	ARG 358	Tampa Shipbuilding Co, Tampa, Florida	23 Apr 1946

Displacement, tons: 7 826 standard; 14 490 full load
Dimensions, feet (metres): 492 × 70 × 27·5 *(150·1 × 21·3 × 8·4)*
Gun: 1—5 in *(127 mm)*/38
Main engines: Turbines (Westinghouse); 8 500 shp; 1 shaft = 16·5 knots
Boilers: 2 (Foster-Wheeler)

Launched on 5 August 1945. Transferred to Taiwan on 15 January 1974. Replaced *Tien Tai* (ex-USS *Tutuila*, ARG 4).

1 Ex-US "ACHELOUS" CLASS (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
TAI WU (ex-*Sung Shan*, ARL 336, ex-USS *Agenor*, ARL 3, ex-*LST 490*)	AP 520	Kaiser Co, Vancouver, Washington	20 Aug 1943

Displacement, tons: 1 625 light; 4 100 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 8—40 mm (quad)
Main engines: 2 General Motors diesels; 1 700 bhp; 2 shafts = 11·6 knots
Troops: 600

Begun for the US Navy as a LST completed as a repair ship for landing craft (ARL). Launched on 3 April 1943. Transferred to France in 1951 for service in Indo-China; subsequently returned to USA and retransferred to Taiwan on 15 September 1957.
Employed as a repair ship (ARL 336, subsequently ARL 236) until converted in Japan in 1973-74 to troop transport. Fully air-conditioned.

TAI WU (as repair ship) (old pennant number)

1 TAIWAN TYPE (TRANSPORT)

Name	*No.*	*Builders*	*Commissioned*
TAI HU (ex-*Ling Yuen*)	522	Taiwan Shipbuilding Co, Keelung	15 Aug 1975

Measurement, tons: 2 510 DWT; 3 040 gross
Dimensions, feet (metres): 328·7 × 47·9 × 16·4 *(100·2 × 14·6 × 5)*
Guns: 2—20 mm (single); 2—5 in MGs (single)
Main engines: Diesel 6-cyl
Complement: 55
Accommodation for troops: 500

Designed by Chinese First Naval Shipyard at Tsoying. Launched 27 January 1975.

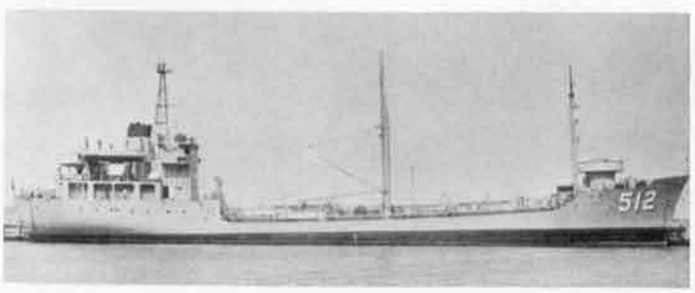
TAI HU *1975*

1 JAPANESE TYPE (SUPPORT TANKER)

Name	*No.*	*Builders*	*Commissioned*
WAN SHOU	AOG 512	Ujina Shipbuilding Co, Hiroshima, Japan	1 Nov 1969

Displacement, tons: 1 049 light; 4 150 full load
Dimensions, feet (metres): 283·8 × 54 × 18 *(86·5 × 16·5 × 5·5)*
Guns: 2—40 mm (single); 2—20 mm
Main engine: Diesel; 2 100 bhp; 1 shaft = 13 knots
Complement: 70
Cargo: 73 600 gallons fuel; 62 000 gallons water

Employed in resupply of offshore islands.



WAN SHOU *1971*

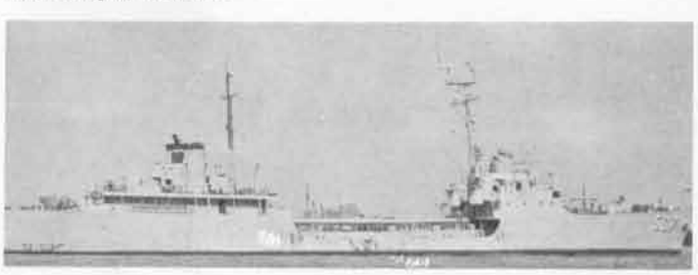
3 Ex-US "PATAPSCO" CLASS (SUPPORT TANKERS)

Name	*No.*	*Builders*	*Commissioned*
LUNG CHUAN (ex-HMNZS *Endeavour*, ex-USS *Namakagon*, AOG 53)	AOG 342	Cargill, Inc, Savage, Minnesota	1945
CHANG PEI (ex-USS *Pecatonica* AOG 57)	AOG 378	Cargill, Inc, Savage Minnesota	28 Nov 1945
HSIN LUNG (ex-USS *Elkhorn* AOG 7)	AOG 389	Cargill, Inc, Savage, Minnesota	12 Feb 1944

Displacement, tons: 1 850 light; 4 335 full load
Dimensions, feet (metres): 310·8 × 48·5 × 15·7 *(94·8 × 14·8 × 4·8)*
Main engines: 2 General Motors diesels; 3 300 bhp; 2 shafts = 14 knots

Chang Pei was launched on 17 March 1945 and transferred to Taiwan on 24 April 1961. The ex-USS *Namakagon* was launched on 4 November 1944 and transferred to New Zealand on 5 October 1962 for use as an Antarctic resupply ship; stengthened for polar operations and renamed *Endeavour;* returned to the US Navy on 29 June 1971 and retransferred to Taiwan the same date. *Hsin Lung* was launched on 15 May 1943 and was transferred to Taiwan on 1 July 1972.
All three transferred by sale 19 May 1976.

Radar: *Chang Pei* has SPS 21.



CHANG PEI (old pennant number)

1 Ex-US YO TYPE (SUPPORT TANKER)

Name	*No.*	*Builders*	*Commissioned*
SZU MING (ex-US *YO 198*)	AOG 504 (ex-*AOG 304*)	Manitowoc S.B. Co, Manitowoc, Wisconsin	1945

Displacement, tons: 650 light; 1 595 full load
Dimensions, feet (metres): 174 × 32·9 × 13·3 *(53·1 × 10 × 4·1)*
Guns: 1—40 mm; 5—20 mm (single)
Main engine: 1 Union diesel; 560 bhp; 1 shaft = 10 knots
Complement: 25

Transferred to Taiwan in December 1949. Reportedly placed in reserve in 1976.

Radar: SO 8.

2 JAPANESE TYPE (SUPPORT TANKERS)

Also reported to be in service.

1 Ex-US "DIVER" CLASS (SALVAGE SHIP)

Name	*No.*	*Builders*	*Commissioned*
TA HU (ex-USS *Grapple*)	324 (ex-ARS 7)	Basalt Rock Co, Napa, California	16 Dec 1943

Displacement, tons: 1 557 standard; 1 745 full load
Dimensions, feet (metres): 213·5 × 39 × 15 *(65·1 × 11·9 × 4·6)*
Gun: 1—40 mm
Main engines: Diesel-electric; 2 shafts; 2 440 shp = 14 knots
Complement: 85

Fitted for salvage, towing and compressed-air diving.
Transferred 1 December 1977.

1 Ex-US "MARK" CLASS (CARGO SHIP)

Name	*No.*	*Builders*	*Commissioned*
YUNG KANG (ex-USS *Mark*, AKL 12, ex-*AG 143* ex-US Army *FS 214*)	AKL 359	Higgins	1944

Displacement, tons: Approx 700
Dimensions, feet (metres): 176·5 × 32·8 × 10 *(53·8 × 10 × 3·1)*
Guns: 2—20 mm
Main engine: Diesel; 1 000 bhp; 1 shaft = 10 knots

Built as a small cargo ship (freight and supply) for the US Army. Transferred to US Navy on 30 September 1947; operated in South-east Asia from 1963 until transferred to Taiwan on 1 June 1971 and by sale 19 May 1976. Acts as AGI.

TUGS

4 Ex-US "CHEROKEE" CLASS

Name	*No.*	*Builders*	*Commissioned*
TA HAN (ex-USS *Tawakoni*, ATF 114)	ATF 542	United Engineering Co, Alameda, California	14 Sep 1944
TA TUNG (ex-USS *Chickasaw*, ATF 83)	ATF 548	United Engineering Co, Alameda, California	4 Feb 1943
TA WAN (ex-USS *Apache*, ATF 67)	ATF 550	Charleston S.B. & D.D. Co, South Carolina	12 Dec 1942
— (ex-USS *Shakori*, ATF 162)	—	Charleston S.B. & D.D. Co, South Carolina	20 Dec 1945

Displacement, tons: 1 235 standard; 1 731 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Guns: 1—3 in *(76 mm)*/50; several light MGs
Main engines: Diesel-electric; 3 000 bhp; 1 shaft = 15 knots

First pair launched on 23 July 1942 and 8 May 1942 respectively. *Ta Tung* transferred to Taiwan in January 1966 and by sale 19 May 1976, *Ta Wan* on 30 June 1974, *Ta Han* by sale 1 August 1978 and ex-*Shakori* by sale 29 August 1980.

3 Ex-US "SOTOYOMO" CLASS

Name	*No.*	*Builders*	*Commissioned*
TA SUEH (ex-USS *Tonkawa*, ATA 176)	ATA 357	Levingston S.B. Co, Orange, Texas	19 Aug 1944
TA TENG (ex-USS *Cahokia*, ATA 186)	ATA 367	Levingston S.B. Co, Orange, Texas	24 Nov 1944
TA PENG (ex-USS *Mohopac*, ATA 196)	ATA 395	Levingston S.B. Co, Orange, Texas	21 Dec 1944

Displacement, tons: 435 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Guns: 1—3 in *(76 mm)*/50; several light MGs
Main engine: Diesel-electric (General Motors diesel); 1 500 bhp; 1 shaft = 13 knots

Ta Sueh launched on 1 March 1944 and transferred to Taiwan in April 1962. *Ta Teng* launched on 18 September 1944; assigned briefly to US Air Force in 1971 until transferred to Taiwan on 29 March 1972. *Ta Peng* transferred on 1 July 1971. Latter two by sale 19 May 1976.
A fourth tug of this class serves as a surveying ship.

TA YU (ex-US *LT 310*) ATA 373 (ex-ATA 545, ex-ATA 345)

Transferred April 1949. Also reported are ATA 391 and 393.

1 Ex-US ARMY ST TYPE

YTL 9 (ex-US Army *ST 2004*)

Former US Army 76 ft harbour tug.

3 Ex-US "YTL 422" CLASS

YTL 11 (ex-USN *YTL 454*)
YTL 12 (ex-USN *YTL 584*)
YTL 14 (ex-USN *YTL 585*)

Former US Navy 66 ft harbour tugs.

5 Ex-US FLOATING DRY DOCKS

Name	*No.*	*Builders*	*Commissioned*
HAY TAN (ex-USN *AFDL 36*)	AFDL 1	—	—
KIM MEN (ex-USN *AFDL 5*)	AFDL 2	—	—
HAN JIH (ex-USN *AFDL 34*)	AFDL 3	—	—
FO WU 5 (ex-USN *ARD 9*)	ARD 5	—	—
FO WU 6 (ex-USS *Windsor*, ARD 22)	ARD 6	—	—

Former US Navy floating dry docks; see USA section for characteristics.

Transfers: AFDL 1 in Mar 1947, AFDL 2 in Jan 1948, AFDL 3 in July 1959, ARD 5 in Oct 1967, ARD 6 in June 1971. ARD 6 by sale 19 May 1976 and ARD 5 on 12 Jan 1977.

SERVICE CRAFT

Approximately 25 non-self-propelled service craft are in use; most are former US Navy service craft.

CUSTOMS SERVICE

Several small ships and small craft as well as the ships listed below are in service with the Customs Service of Taiwan, an agency of the Ministry of Finance.

2 Ex-US "ADMIRABLE" CLASS

Name	*No.*	*Builders*	*Commissioned*
HUNG HSING (ex-USS *Embattle*, AM 226)	A 7	American Shipbuilding Co, Lorain, Ohio	25 Apr 1945
— (ex-USS *Improve*, AM 247)	—	Savannah Machine & Foundry Co, Georgia	29 Feb 1944

Displacement, tons: 903 full load
Dimensions, feet (metres): 184·5 × 33 × 9·8 *(56·3 × 10·1 × 3)*
Guns: 2—20 mm
Main engines: 2 diesels (Cooper Bessemer); 1 710 bhp; 2 shafts = 14 knots

Former US Navy minesweepers (AM). Launched on 17 September 1944 and 26 September 1943 respectively.

3 Ex-US "PC 461" CLASS

Name	*No.*	*Builders*	*Commissioned*
— Ex-*Tung Kiang* (ex-USS *Placerville*, PC 1087)	PC 119	USA	1943
— Ex-*Hsi Kiang* (ex-USS *Susanville*, PC 1149)	PC 120	USA	1944
— Ex-*Pei Kiang* (ex-USS *Hanford* PC 1142)	PC 122	USA	1943

Displacement, tons: 450 full load
Dimensions, feet (metres): 173·66 × 23 × 8·9 *(52·9 × 7 × 2·7)*
Guns: 2—20 mm
Main engines: 2 General Motors diesels; 2 880 bhp; 2 shafts = 20 knots
Range, miles: 5 000 at 10 knots
Complement: 65

Former US Navy steel hulled submarine chasers. Originally transferred to Taiwan for naval use; subsequently allocated to the Customs Service. Transferred in July 1957.
All sold in May 1976.

2 HALTER "78 ft" PATROL CRAFT

Purchased in 1977.

TANZANIA

(see also Zanzibar)

Ministerial

Minister of Defence:
Rashidi Kawawa

Personnel

(a) 1981: 700 (approx)
(b) Voluntary service

Base

Dar Es Salaam. A base area built under Chinese supervision.

Mercantile Marine

Lloyd's Register of Shipping:
32 vessels of 55 916 tons gross

LIGHT FORCES

6 Ex-CHINESE "SHANGHAI II"CLASS (FAST ATTACK CRAFT—GUN)

JW 9861-6

Displacement, tons: 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin) 4—25 mm (twin)
Main engines: 4 M50F diesels; 4 800 bhp = 30 knots
Range, miles: 800 at 17 knots
Complement: 25

Transferred by the People's Republic of China in 1970-71.

Radar: Search: Skin Head.

4 Ex-CHINESE "HUCHUAN" CLASS (FAST ATTACK CRAFT—HYDROFOIL (TORPEDO))

Displacement, tons: 39 full load
Dimensions, feet (metres): 71·5 × 16·6 oa × 3·3 (hullborne) *(21·8 × 5 × 1)*
Guns: 2—14·5 MGs (twin)
Torpedo tubes: 2—21 in (533 mm)
Main engines: 3 diesels; 3 shafts; 3 300 bhp = 50+ knots (calm)
Range, miles: 500 at 20 knots

Transferred 1975.

Radar: Search: Skin Head.
Navigation: Don.

3 Ex-GDR "P 6" CLASS (FAST ATTACK CRAFT—GUN)

Displacement, tons: 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (twin)
Main engines: 4 diesels; 4 shafts; 4 800 bhp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Transferred 1974-75. Torpedo tubes removed.

Radar: Search: Pot Head.

4 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

JW 9841-4

Displacement, tons: 22 standard; 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·5 mm MGs (twin)
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 diesels; 2 shafts; 2 400 bhp = 50 knots
Complement: 12

Transferred 1970-73 (from the USSR and East Germany). Some have torpedo tubes removed.

Radar: Search: Skin Head.

1 Ex-SOVIET "POLUCHAT" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 400 hp = 20 knots
Range, miles: 460 at 17 knots
Complement: 15

2 Ex-GDR "SCHWALBE" CLASS (COASTAL PATROL CRAFT)

ARAKA **SALAAM**

Displacement, tons: 70 full load
Dimensions, feet (metres): 85·2 × 14·8 × 4·6 *(26 × 4·5 × 1·4)*
Guns: 2—25 mm (twin); 2 MGs
Main engines: Diesel; 300 hp = 17 knots

Launched 1955-56. Transferred 1966-67.

"SCHWALBE" Class

2 Ex-GDR COASTAL PATROL CRAFT

RAFIKI **UHURU**

Displacement, tons: 50
Dimensions, feet (metres): 78·7 × 16·4 × 4·3 *(24 × 5 × 1·3)*
Guns: 1—40 mm; 4 MGs

Purchased 1967, via Portugal.

4 Ex-CHINESE "YULIN" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 10
Dimensions, feet (metres): 40 × 9·5 × 3·5 *(12·2 × 2·9 × 1·1)*
Guns: 2—14·5 mm (twin); 2—12·7 mm (twin)
Main engine: 1 diesel; 1 shaft; 300 bhp = 22 knots
Complement: 10

Transferred late 1966. Based on Victoria Nyanza.

1 SURVEY LAUNCH

Dimensions, feet (metres): 91·8 × 15·7 × 3·3 *(28 × 4·8 × 1)*
Main engine: 1 Caterpillar diesel; 480 hp = 14 knots

Ordered from Bayerische Schiffbau, West Germany. Completed February 1978.

RESEARCH VESSEL

Name	*No.*	*Builders*	*Commissioned*
KASKAZI	—	M. Jansen, Leer, FDR	29 Apr 1977

Displacement, tons: 499
Dimensions, feet (metres): 122·8 × 30·8 × 15·5 *(37·4 × 9·3 × 4·7)*
Main engine: 1 diesel; 1 240 hp = 12 knots

Laid down 14 September 1976, launched 3 December 1976.

2 Ex-CHINESE LCMs

THAILAND

Ministerial

Minister of Defence:
General Prem Tinasulanonda

Headquarters' Appointments

Commander-in-Chief of the Navy:
Admiral Samut Sahanavin
Deputy Commander-in-Chief:
Admiral Udom Pumhiran
Chief of Staff (RTN):
Admiral Ophas Charmikorn

Senior Flag Officer

Commander-in-Chief, Fleet:
Admiral Somboon Chuapibul

Diplomatic Representation

Naval Attaché in London:
Captain Manu Sagarik
Naval Attaché in Washington:
Captain Vichet Karunyavanij

Personnel

(a) 1981: Navy, 30 000 (7 000 officers and 23 000 ratings) including Marine Corps: 20 000 (1 000 officers and 19 000 men)
(b) 2 years' national service

Bases

Bangkok, Sattahip, Songkhla, Paknam. The new base on the West coast is at Phang-Nga.

Prefix to Ships' Names

HTMS

General

Replacement programmes appear to take account of the problems of extended off-shore limits and the continued upheavals in the Kampuchea—Viet-Nam area.

Strength of the Fleet

Type	*Active*	*Building*
Frigates	6	—
Fast Attack Craft (Missile)	6	2
Large Patrol Craft	21	—
Coastal Patrol Craft	19	—
River Patrol Craft	40	—
MCM Support Ship	1	—
Coastal Minesweepers	4	—
MSBs	5	—
LSTs	5	—
LSMs	3	—
LCG	1	—
LSILs	2	—
LCTs	0	4
Landing Craft	41+	—
Survey Vessels	5	1
Tankers	2	1
Water Boats	2	—
Tugs	5	—
Transports	2	—
Training Ships	3	—

Mercantile Marine

Lloyd's Register of Shipping:
153 vessels of 391 456 tons gross

DELETIONS

Notes: (a) Frigates *Bangpakong, Maeklong* and *Phosamton* transferred to training duties.
(b) Certain errors in listing the "T" type coastal patrol craft have been corrected giving an apparent reduction of three.

Large Patrol Craft

1976 *Chumporn, Phuket, Trad, Kantang, Klongyai*
1978 *Pattani, Surasdra, Chandhaburi, Rayong, T 85*
1979 *Sattahip*

Minewarfare Forces

1979 *Rang Kwien*
1980 *Bangrachan, Nhong Sarai, MLMS 1-5*

Coastal Patrol Craft

1976 *T 93*

Tankers

1975 *Prong, Samui*
1979 *Chula, Matra*

Tug

1980 *Rad*

FRIGATES

1 YARROW TYPE

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MAKUT RAJAKUMARN	7	Yarrow & Co Ltd, Scotstoun	11 Jan 1970	18 Nov 1971	7 May 1973

Displacement, tons: 1 650 standard; 1 900 full load
Dimensions, feet (metres): 320 × 36 × 18·1 *(97·6 × 11 × 5·5)*
Missile launchers: SAM; 1 quad Seacat
Guns: 2—4·5 in Mk 8 *(114 mm)* (single);
2—40 mm/60 Bofors (single)
A/S weapons: 1 triple-barrelled Limbo mortar; 1 DC rack; 2 DCTs
Main engines: 1 Rolls-Royce Olympus gas turbine; 23 125 shp; 1 Crossley-Pielstick 12 PC2V diesel; 2 shafts; 6 000 bhp
Speed, knots: 26, 18 on diesel
Range, miles: 5 000 at 18 knots (diesel); 1 200 at 26 knots
Complement: 140 (16 officers, 124 ratings)

An order was placed on 21 August 1969 for a general purpose frigate. The ship is largely automated with a consequent saving in complement, and has been most successful in service. Fitted as flagship.

Electronics: HSA CIC system. Racal DF.

Radar: Surveillance: One LW 04 (amidships).
Fire control: One M 22 series (radome).
Seacat control: One M 44 Series (aft).
Navigation: One Decca Type 626.
IFF: UK Mk 10.

MAKUT RAJAKUMARN *1978, Royal Thai Navy*

Sonar: UK Type 170 B, Plessey Type MS 27 and Type 162.

2 US "PF 103" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TAPI	5	American S.B. Co, Toledo, Ohio	1 Apr 1970	17 Oct 1970	1 Nov 1971
KHIRIRAT	6	Norfolk S.B. & D.D. Co	18 Feb 1972	2 June 1973	10 Aug 1974

Displacement, tons: 900 standard; 1 135 full load
Dimensions, feet (metres): 275 × 33 × 10 *(83·8 × 10 × 3)*
Guns: 2—3 in *(76 mm)*; 2—40 mm (twin)
A/S weapons: Hedgehogs; 6 (2 triple) Mk 32 A/S torpedo tubes
Main engines: 2 FM Diesels; 6 000 bhp
Speed, knots: 20
Complement: 150

Of similar design to the Iranian ships of the "Bayandor" class. *Tapi* was ordered on June 27 1969. *Khirirat* was ordered on 25 June 1971.

Fire control: Mk 63 GFCS (SPG 34).

Radar: Air search: SPS 6.
Fire control: SPG 34.

TAPI *1975, Royal Thai Navy*

1 Ex-US "CANNON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
PIN KLAO (ex-USS *Hemminger*, DE 746)	3 (ex-1)	Western Pipe & Steel Co	1943	12 Sep 1943	30 May 1944

Displacement, tons: 1 240 standard; 1 900 full load
Dimensions, feet (metres): 306 × 36·7 × 14 *(93·3 × 11·2 × 4·3)*
Guns: 3—3 in *(76 mm)*/50; 6—40 mm
A/S weapons: 6 (2 triple) Mk 32 for A/S torpedoes; 8 DCTs
Main engines: 4 General Motors diesels with electric drive; 2 shafts; 6 000 bhp
Speed, knots: 19
Oil fuel, tons: 316
Range, miles: 9 000 at 12 knots
Complement: 220

Transferred from US Navy to Royal Thai Navy at New York Navy Shipyard in July 1959 under MDAP and by sale 6 June 1975. The three 21-in torpedo tubes were removed and the four 20 mm guns were replaced by four 40 mm. The six A/S torpedo tubes were fitted in 1966. Finally purchased 6 June 1975.

Radar: Surface search: SPS 5 and SC.
Fire control: Mk 52.

PIN KLAO — *1977, Royal Thai Navy*

2 Ex-US "TACOMA" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
TAHCHIN (ex-USS *Glendale*, PF 36)	1	Consolidated Steel Corporation, Los Angeles	6 Apr 1943	28 May 1943	1 Oct 1943
PRASAE (ex-USS *Gallup*, PF 47)	2	Consolidated Steel Corporation, Los Angeles	18 Aug 1943	17 Sep 1943	29 Feb 1944

Displacement, tons: 1 445 standard
Dimensions, feet (metres): 304 × 37·5 × 13·7 *(92·7 × 11·4 × 4·2)*
Guns: 3—3 in *(76 mm)*/50; 2—40 mm; 9—20 mm
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes; 8 DCTs
Main engines: Triple expansion; 2 shafts; 5 500 ihp
Boilers: 2 small water tube 3-drum type
Speed, knots: 18
Oil fuel, tons: 685
Range, miles: 7 200 at 12 knots
Complement: 180

Delivered to the Royal Thai Navy on 29 October 1951. The last survivors of the US equivalent of the British and Canadian "River" class.

Radar: Surface search: SPS 5 or 10.
Air search: SPS 6.
Fire control: Mk 51.

PRASAE — *8/1977, Royal Thai Navy*

LIGHT FORCES

0 + 2 FAST ATTACK CRAFT (MISSILE)

Displacement, tons: 450
Dimensions, feet (metres): 198 × 29 × 15 *(60·4 × 8·8 × 4·5)*
Missiles: SSM
Guns: 2—76 mm OTO Melara; 2—40 mm Breda Bofors (twin)
Main engines: 3 MTU 20V 538T B92 diesels; 12 600 hp; 3 shafts = 30 knots
Range, miles: 3 000 cruising
Complement: 45

Ordered in 1979 from C. N. Breda for delivery in 1982.

Countermeasures: 4 Hycor Mk 135 Chaff launchers.

Radar: WM 22/61.

3 FAST ATTACK CRAFT—MISSILE

Name	No.	Builders	Commissioned
RATCHARIT	4	C. N. Breda (Venezia)	10 Aug 1979
WITTHAYAKHOM	5	C. N. Breda (Venezia)	12 Nov 1979
UDOMDET	6	C. N. Breda (Venezia)	21 Feb 1980

Displacement, tons: 235 standard; 270 full load
Dimensions, feet (metres): 163·4 × 24·6 × 7·5 *(49·8 × 7·5 × 2·3)*
Missiles: SSM; 4 Exocet (single cells)
Guns: 1—76 mm/62 (single Compact); 1—40 mm Breda Bofors
Main engines: 3 MTU diesels; 13 500 hp = 37 knots
Range: 2 000 at 15 knots
Complement: 45

Ordered June 1976. Standard Breda BMB 230 design. *Ratcharit* launched 30 July 1978, *Witthayakhom* 2 September 1978 and *Udomdet* 28 September 1978.

Radar: Fire control: WM 20 series.
Navigation: One set.

RATCHARIT — *1979, Royal Thai Navy*

3 LÜRSSEN TNC 45 TYPE (FAST ATTACK CRAFT—MISSILE)

Name	No.	Builders	Commissioned
PRABPARAPAK	1	Singapore Shipbuilding and Engineering Ltd	28 July 1976
HANHAK SATTRU	2	Singapore Shipbuilding and Engineering Ltd	6 Nov 1976
SUPHAIRIN	3	Singapore Shipbuilding and Engineering Ltd	1 Feb 1977

Displacement, tons: 224 standard; 268 full load
Dimensions, feet (metres): 149 × 24·3 × 7·5 *(45·4 × 7·4 × 2·3)*
Missiles: SSM; 5 Gabriel (1 triple, 2 single)
Guns: 1—57 mm/70 Bofors (fwd); 1—40 mm/70 Bofors (aft)
Main engines: 4 Maybach (MTU) diesels; 14 400 shp = 38+ knots
Range: 2 000 cruising
Complement: 41

Ordered June 1973. Built under licence from Lürssen. Launch dates—*Prabparapak* 29 July 1975, *Hanhak Sattru* 28 October 1975, *Suphairin* 20 February 1976.

Radar: Fire control: WM 20 series.
Navigation: One set.

PRABPARAPAK — *1978, Royal Thai Navy*

7 Ex-US "PC 461" CLASS (LARGE PATROL CRAFT)

SARASIN (ex-PC *495*) PC 1
THAYANCHON (ex-PC *575*) PC 2
PHALI (ex-PC *1185*) PC 4
SUKRIP (ex-PC *1218*) PC 5
TONGPLIU (ex-PC *616*) PC 6
LIULOM (ex-PC *1253*) PC 7
LONGLOM (ex-PC *570*) PC 8

Displacement, tons: 280 standard; 450 full load
Dimensions, feet (metres): 173·7 × 23 × 8·9 *(52·9 × 7 × 2·7)*
Guns: 1—3 in; 1—40 mm; 5—20 mm
A/S weapons: 2 (single) Mk 32 ASW torpedo tubes (except *Sarasin*)
Main engines: 2 diesels; 2 shafts; 2 880 bhp = 20 knots
Oil fuel, tons: 60
Range, miles: 5 000 at 10 knots
Complement: 62 to 71

Launched in 1941-43 as US PCs. All transferred between March 1947 and December 1952.

Radar: SPS 25.

LIULOM *1978, Royal Thai Navy*

4 Ex-US CG "CAPE" CLASS (LARGE PATROL CRAFT)

T 81 (ex-*CG 13*)
T 82 (ex-*CG 14*)
T 83 (ex-*CG 15*)
T 84 (ex-*CG 16*)

Displacement, tons: 95 standard; 105 full load
Dimensions, feet (metres): 95 × 20 × 6 *(29 × 6·1 × 1·8)*
Gun: 1—20 mm
A/S weapons: 2 DC racks; 2 Mousetraps
Main engines: 4 diesels; 2 324 hp; 2 shafts = 20 knots
Range, miles: 1 500 at 14 knots
Complement: 15

US Coast Guard cutters transferred in 1954. Similar to those built for US Coast Guard by US Coast Guard Yard, Curtis Bay in 1953. Cost £475 000 each.

T 82 (as CG 14) *Royal Thai Navy*

10 Ex-US "PGM 71" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	T 11 (ex-US *PGM 71*)	Peterson Builders Inc	1 Feb 1966
—	T 12 (ex-US *PGM 79*)	Peterson Builders Inc	1967
—	T 13 (ex-US *PGM 107*)	Peterson Builders Inc	28 Aug 1967
—	T 14 (ex-US *PGM 116*)	Peterson Builders Inc	18 Aug 1969
—	T 15 (ex-US *PGM 117*)	Peterson Builders Inc	18 Aug 1969
—	T 16 (ex-US *PGM 115*)	Peterson Builders Inc	12 Feb 1970
—	T 17 (ex-US *PGM 113*)	Peterson Builders Inc	12 Feb 1970
—	T 18 (ex-US *PGM 114*)	Peterson Builders Inc	12 Feb 1970
—	T 19 (ex-US *PGM 123*)	Peterson Builders Inc	25 Dec 1970
—	T 110 (ex-US *PGM 124*)	Peterson Builders Inc	Oct 1970

Displacement, tons: 130 standard; 147 full load
Dimensions, feet (metres): 101 × 21 × 6 *(30·8 × 6·4 × 1·9)*
Guns: 1—40 mm; 1—20 mm; 2—5 MGs
Main engines: Diesels; 2 shafts; 1 800 bhp = 18·5 knots
Range, miles: 1 500 at 10 knots
Complement: 30

T 11 was launched on 5 May 1965.

T 14 *1980, Royal Thai Navy*

4 THAI BUILT (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
—	T 91	Royal Thai Naval Dockyard, Bangkok	1971
—	T 92	Royal Thai Naval Dockyard, Bangkok	1971
—	T 93	Royal Thai Naval Dockyard, Bangkok	1978
—	T 94	Royal Thai Naval Dockyard, Bangkok	1981

Displacement, tons: 87·5 standard
Dimensions, feet (metres): 104·3 × 17·5 × 5·5 *(31·8 × 5·3 × 1·7)*
(T 93 and 94; 118 × 18·7 × 4·9 *(36 × 5·7 × 1·5)*)
Guns: 1—40 mm; 1—20 mm
Main engines: 2 diesels; 2 shafts; 1 600 bhp = 25 knots
Range, miles: 700 at 21 knots
Complement: 21 (23—T 93 and 94)

T 91 *1971, Royal Thai Navy*

12 Ex-US "SWIFT" CLASS (COASTAL PATROL CRAFT)

T 21-29, T 210-212

Displacement, tons: 20 standard; 22 full load
Dimensions, feet (metres): 50 × 13 × 3·5 *(15·2 × 4 × 1·1)*
Guns: 2—81 mm mortars; 2—5 MGs (singles)
Main engines: Diesels; 2 shafts; 480 bhp = 25 knots
Complement: 5

"Swift" class patrol craft transferred from US Navy from 1967 to 1975.

T 210 *1980, Royal Thai Navy*

3 THAI BUILT (COASTAL PATROL CRAFT)

T 213-215

Displacement, tons: 24 full load
Dimensions, feet (metres): 64 × 17·5 × 5 *(19·5 × 5·3 × 1·5)*
Guns: 1—20 mm; 1—81 mm mortar with ·5 MG
Main engines: 2 diesels; 2 shafts; 715 bhp = 22 knots
Complement: 8

Built by Italthai Marine Ltd in 1970.

37 Ex-US "PBR Mk II" (RIVER PATROL CRAFT)

Displacement, tons: 8
Dimensions, feet (metres): 32 × 11 × 2·6 *(9·8 × 3·4 × 0·8)*
Guns: 3—12·7 mm MGs; 1—60 mm mortar
Main engines: 2 Detroit diesels; 2 Jacuzzi waterjets; 430 hp = 25 knots
Complement: 4

Transferred from 1957 to 1973. Employed on Mekong River.

3 Ex-US "RPC" CLASS (RIVER PATROL CRAFT)

Displacement, tons: 13 full load
Dimensions, feet (metres): 35·8 × 10·5 × 3·3 *(10·9 × 3·2 × 1)*
Guns: 4—MGs
Main engines: 2 Gray diesels; 450 hp = 14 knots
Complement: 6

Transferred in 1967. Employed on Mekong River.

"RPC" Class (old number) *8/1976, Dr. Giorgio Arra*

MINE WARFARE FORCES

1 MCM SUPPORT SHIP

Name	*No.*	*Builders*	*Commissioned*
THALANG	1	Bangkok Dock Co Ltd	4 Aug 1980

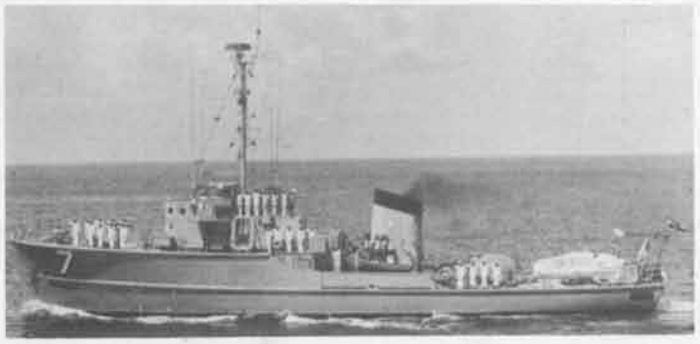
Displacement, tons: 1 000 standard
Dimensions, feet (metres): 185·5 × 33 × 10 *(55·7 × 10 × 3·1)*
Guns: 1—40 mm; 2—20 mm; 2—5 MGs
Main engines: 2 diesels; 2 shafts; 1 310 bhp = 12 knots
Complement: 77

4 US "BLUEBIRD" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
LADYA (ex-US *MSC 297*)	5	Peterson Builders Inc, Sturgeon Bay, Wisconsin	14 Dec 1963
BANGEKO (ex-US *MSC 303*)	6	Dorchester S.B. Corporation, Camden	9 July 1965
TADINDENG (ex-US *MSC 301*)	7	Tacoma Boatbuilding Co, Tacoma, Washington	26 Aug 1965
DONCHEDI (ex-US *MSC 313*)	8	Peterson Builders Inc, Sturgeon Bay, Wisconsin	17 Sep 1965

Displacement, tons: 330 standard; 362 full load
Dimensions, feet (metres): 145·3 × 27 × 8·5 *(44·3 × 8·2 × 2·6)*
Guns: 2—20 mm
Main engines: 4 General Motors diesels; 2 shafts; 1 000 bhp = 13 knots
Range, miles: 2 500 at 10 knots
Complement: 43 (7 officers, and 36 men)

Constructed for Thailand.



TADINDENG *1978, Royal Thai Navy*

5 Ex-US MSB

MLMS 6-10

Displacement, tons: 21 full load
Dimensions, feet (metres): 50·2 × 13·1 × 4·3 *(15·3 × 4 × 1·3)*
Guns: MGs
Main engine: 1 diesel = 8 knots

Transferred mid-1960s.

AMPHIBIOUS FORCES

5 Ex-US "1-510" and "511-1152 CLASSES (LSTs)

Name	*No.*	*Builders*	*Commissioned*
ANGTHONG (ex-USS *LST 294*)	LST 1	American Bridge Co, Pa.	Jan 1944
CHANG (ex-USS *Lincoln County*, LST 898)	LST 2	Dravo Corporation	29 Dec 1944
PANGAN (ex-USS *Stark County*, LST 1134)	LST 3	Chicago Bridge and Iron Co, Ill.	7 Apr 1945
LANTA (ex-USS *Stone County*, LST 1141)	LST 4	Chicago Bridge and Iron Co, Ill.	7 Apr 1945
PRATHONG (ex-USS *Dodge County*, LST 722)	LST 5	Jefferson B & M Co, Ind.	13 Sep 1944

Displacement, tons: 1 625 standard; 3 640/4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·4)*
Guns: 6—40 mm; 4—20 mm
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 11 knots
Range, miles: 9 500 at 9 knots
Complement: 80
Cargo capacity: 2 100 tons

Angthong is employed as training ship. *Chang*, transferred to Thailand in 1962, was laid down on 15 October 1944. *Pangan* was transferred on 16 May 1966, *Lanta* on 12 March 1970 (by sale 1 March 1979) and *Prathong* on 17 December 1975.

CHANG *1967, Royal Thai Navy*

3 Ex-US "LSM 1" CLASS

Name	*No.*	*Builders*	*Commissioned*
KUT (ex-USS *LSM 338*)	LSM 1	Pullman Std Car Co, Chicago	16 Jan 1945
PHAI (ex-USS *LSM 333*)	LSM 2	Pullman Std Car Co, Chicago	25 Nov 1945
KRAM (ex-USS *LSM 469*)	LSM 3	Brown S.B. Co, Houston, Texas	17 Mar 1945

Displacement, tons: 743 standard; 1 095 full load
Dimensions, feet (metres): 203·5 × 34·5 × 8·3 *(62 × 10·5 × 2·4)*
Guns: 1—40 mm; 3—20 mm
Main engines: Diesel direct drive; 2 shafts; 2 800 bhp = 12·5 knots
Range, miles: 2 500 at 12 knots
Complement: 55

Former US landing ships of the LCM, later LSM (Medium Landing Ship) type. *Kram* was transferred to Thailand under MAP at Seattle, Washington, on 25 May 1962.

PHAI

2 Ex-US "LSIL 351" CLASS

PRAB (ex-*LSIL 670*) LSIL 1 **SATAKUT** (ex-*LSIL 739*) LSIL 2

Displacement, tons: 230 standard; 387 full load
Dimensions, feet (metres): 157 × 23 × 6 *(47·9 × 7 × 1·8)*
Guns: 2—20 mm
Main engines: Diesel; 2 shafts; 1 320 bhp = 14 knots
Complement: 54

Prab non-operational.

PRAB

1 Ex-US LCG TYPE

NAKHA (ex-USS *LSSL* 102) LSSL 3

Displacement, tons: 233 standard; 287 full load
Dimensions, feet (metres): 158 × 23 × 4·25 *(47·5 × 7 × 1·4)*
Guns: 1—3 in; 4—40 mm; 4—20 mm; 4—81 mm mortars
Main engines: Diesels; 2 shafts; 1 320 bhp = 15 knots
Range, miles: 4 700 at 10 knots

Transferred in 1966. Acquired when Japan returned her to the USA.

NAKHA

0 + 4 NEW CONSTRUCTION (LCTs)

Displacement, tons: 200 standard; 375 full load
Dimensions, feet (metres): 134·5 × 28·9 × 6·2 *(41 × 8·8 × 1·9)*
Guns: 1—20 mm; 1—5 MG
Speed, knots: 12
Range, miles: 1 200 at 10 knots
Complement: 32

Ordered from Bangkok Dock Co Ltd in 1980.

26 Ex-US LCM 6

14-16, 61-68, 71-78, 81-82, 85-87

First 21 delivered 1969.

8 Ex-US LCVP

6 Ex-US LCUs

MATAPHON LCU 1
RAWI LCU 2
ARDANG LCU 3
PHETRA LCU 4
KOLUM LCU 5
TALIBONG LCU 6

Displacement, tons: 134 standard; 279 full load
Dimensions, feet (metres): 112 × 32 × 4 *(34·1 × 9·8 × 1·2)*
Guns: 2—20 mm
Main engines: 3 diesels; 3 shafts; 675 bhp = 10 knots
Complement: 37

Employed as transport ferries. Originally "LCT 6" class.

1 LCA

Dimensions, feet (metres): 39·4 × 9·8 × — *(12 × 3 × —)*
Main engines: 2 Chrysler diesels; 2 Castoldi Mod 06 jet units = 25 knots
Capacity: 35 troops

Built in Thailand. Fibreglass hull with bow ramp.

LCAs

There is also a large but unknown number of Thai-built LCAs.

TRAINING SHIPS

1 Ex-BRITISH "ALGERINE" CLASS

Name	*No.*	*Builders*	*Commissioned*
PHOSAMTON (ex-HMS *Minstrel*)	MSF 1	Redfern Construction Co	1945

Displacement, tons: 1 040 standard; 1 335 full load
Dimensions, feet (metres): 225 × 35·5 × 11·5 *(68·6 × 10·8 × 3·5)*
Guns: 1—4 in *(102 mm)*; 6—20 mm
A/S weapons: 4 DCTs
Main engines: Triple expansion; 2 shafts; 2 000 ihp
Boilers: Two 3-drum type
Speed, knots: 16
Oil fuel, tons: 270
Range, miles: 4 000 at 10 knots
Complement: 103

Transferred in April 1947. The 20 mm guns were increased from three to six, and the DCTs from two to four in 1966. Marginally operational—now used for training.

Name	*No.*	*Builders*	*Commissioned*
MAEKLONG	3	Uraga Dock Co, Japan	June 1937

Displacement, tons: 1 400 standard; 2 000 full load
Dimensions, feet (metres): 269 × 34 × 10·5 *(82 × 10·4 × 3·2)*
Guns: 4—3 in *(76 mm)*/50 (singles); 3—40 mm; 3—20 mm
Main engines: Triple expansion; 2 shafts; 2 500 ihp
Boilers: 2 water tube
Speed, knots: 14
Oil fuel, tons: 487
Range, miles: 8 000 at 12 knots
Complement: 155 as training ship

Employed as training ship. The four 18-in torpedo tubes were removed.

Armament: Four 4·7-in guns replaced by 3-in guns in 1974.

1 Ex-BRITISH "FLOWER" CLASS

Name	*No.*	*Builders*	*Commissioned*
BANGPAKONG (*ex-Gondwana*, ex-HMS *Burnet*)	P 4	Ferguson Bros, Port Glasgow	23 Sep 1943

Displacement, tons: 1 060 standard; 1 350 full load
Dimensions, feet (metres): 203·2 × 33 × 14·5 *(61·9 × 10 × 4·4)*
Guns: 1—3 in *(76 mm)*/50; 1—40 mm; 6—20 mm
A/S weapons: 4 DCTs
Main engines: Triple expansion; 2 880 ihp = 16 knots
Boilers: Two 3-drum type
Range, miles: 4 800 at 12 knots
Complement: 100

Served in Indian Navy before transfer to Thailand 15 May 1947. Now used for training.

OCEANOGRAPHIC AND SURVEY SHIPS

0 + 1 OCEANOGRAPHIC SHIP

Laid down 27 August 1979 by Bangkok Dock Co Ltd for delivery in 1983. Of 206·3 ft *(62·9 m)* long with a speed of 15 knots, a complement of 92 and carrying four 20 mm guns.

Name	*No.*	*Builders*	*Commissioned*
CHANDHARA	AGS 11	C. Melchers & Co, Bremen, W. Germany	1961

Displacement, tons: 870 standard; 996 full load
Dimensions, feet (metres): 229·2 × 34·5 × 10 *(69·9 × 10·5 × 3)*
Guns: 1—40 mm; 1—20 mm
Main engines: 2 diesels; 2 shafts; 1 000 bhp = 13·25 knots
Range, miles: 10 000 (cruising)
Complement: 72

Laid down on 27 September 1960. Launched on 17 December 1960.

SURIYA

Displacement, tons: 690
Complement: 60 (12 officers, 48 men)

Completed 1979.

SURIYA *1980, Royal Thai Navy*

3 OCEANOGRAPHIC CRAFT

Of 90 tons, with a crew of eight launched in 1955.

SERVICE FORCES

1 REPLENISHMENT TANKER

Name	*No.*	*Builders*	*Commissioned*
CHULIA	—	Singapore Slipway and Engineering Co	1981

Measurement, tonnes: 960
Dimensions, feet (metres): 219·8 × 31·2 × — *(67 × 9·5 × —)*
Main engines: 2 MTU 12V 396 TC62; 2 400 hp = 14 knots
Complement: 39

Launched on 24 September 1980.

Replenishment: By House Handling Crane Boom.

1 HARBOUR TANKER

Name	*No.*	*Builders*	*Commissioned*
SAMED	YO 11	Royal Thai Naval Dockyard, Bangkok	15 Dec 1970

Displacement, tons: 360 standard; 485 full load
Dimensions, feet (metres): 120 × 20 × 10 *(36·6 × 6·1 × 3)*
Main engine: Diesel; 500 bhp = 9 knots

Launched on 8 July 1966.

1 HARBOUR TANKER

Name	*No.*	*Builders*	*Commissioned*
PROET	YO 9	Royal Thai Naval Dockyard, Bangkok	16 Jan 1970

Displacement, tons: 360
Dimensions, feet (metres): 122·7 × 19·7 × 8·7 *(37·4 × 6 × 2·7)*
Main engines: Diesels; 500 bhp = 9 knots

1 TRANSPORT

Name	*No.*	*Builders*	*Commissioned*
SICHANG	AKL 1	Harima Co, Japan	Jan 1938

Displacement, tons: 815 standard
Dimensions, feet (metres): 160 × 28 × 16 *(48·8 × 8·5 × 4·9)*
Main engines: 2 diesels; 2 shafts; 550 bhp = 16 knots
Complement: 30

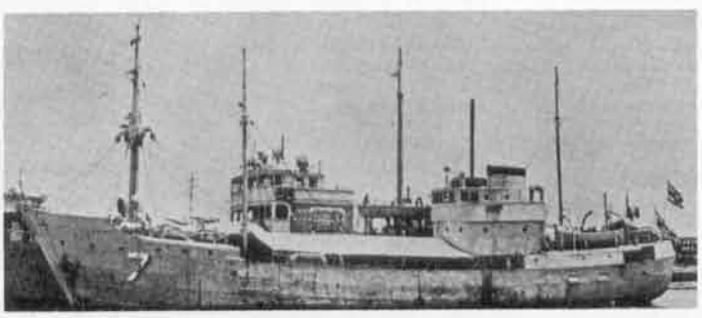
Sichang was launched on 10 November 1937. Completed in January 1938.

1 TRANSPORT

KLED KEO AF 7

Displacement, tons: 382 standard; 450 full load
Dimensions, feet (metres): 160·1 × 24·9 × 14 *(46 × 7·6 × 4·3)*
Guns: 3—20 mm
Main engine: 1 diesel; 600 hp = 12 knots
Complement: 54

Operates with patrol boat squadron.



KLED KEO

2 WATER CARRIERS

Name	*No.*	*Builders*	*Commissioned*
CHUANG	YW 8	Royal Thai Naval Dockyard, Bangkok	1965
CHARN	YW 6	Royal Thai Naval Dockyard, Bangkok	1965

Displacement, tons: 305 standard; 485 full load
Dimensions, feet (metres): 136 × 24·6 × 10 *(42 × 7·5 × 3·1)*
Main engine: General Motors diesel; 500 bhp = 11 knots
Complement: 29

Chuang launched on 14 January 1965.

TUGS

2 NEW CONSTRUCTION

Under construction in Singapore for completion late 1981.

Name	*No.*	*Builders*	*Commissioned*
SAMAE SAN (*ex-Empire Vincent*)	YTM 1	Cochrane & Sons Ltd, Selby, N. Yorks, England	—

Displacement, tons: 503 full load
Dimensions, feet (metres): 105 × 26·5 × 13 *(32 × 8·1 × 4)*
Main engine: Triple expansion; 850 ihp = 10·5 knots
Complement: 27

2 Ex-US "YTL 422" CLASS

KLUENG BADEN YTL 2 **MARN VICHAI** YTL 3

Displacement, tons: 63 standard
Dimensions, feet (metres): 64·7 × 16·5 × 6 *(19·7 × 5 × 1·8)*
Main engines: Diesels; speed = 8 knots

Bought from Canada 1953.

"YTL 422" Class *8/1976, Dr. Giorgio Arra*

ROYAL THAI MARINE POLICE

A coast guard force with a considerable number of patrol craft in addition to those listed below.

2 LARGE PATROL CRAFT

102 **103**

Of 400 tons with a 76 mm gun and diesel engines.

2 LARGE PATROL CRAFT

DAMRONG **RACHANUPHAT**

Of 200 tons with a 76 mm and two 20 mm guns. Four diesels give a speed of 30 knots. Built in Yokohama 1975.

3 HALTER TYPE (COASTAL PATROL CRAFT)

THRA ONG CHAO KAMROP 807
PICHARN PHOLAKIT 808
RAM INTHRA 809

Displacement, tons: 34
Dimensions, feet (metres): 65 × 17 × 8·3 *(19·8 × 5·2 × 2·5)*
Main engines: 2 Detroit 12V7 ITI diesels; 1 020 hp

Delivered by Halter Marine, New Orleans in 1978. Aluminium hulls. Eight more of similar type planned.

Halter Type (old number) *1978, Halter Marine*

8 COASTAL/RIVER PATROL CRAFT

Displacement, tons: 18
Dimensions, feet (metres): 54·1 × 12·5 × 3·3 *(16·5 × 3·8 × 1)*
Guns: 2—12·7 mm
Main engines: 2 Cummins diesels; 400 hp = 22 knots

Built by Captain Co, Thailand, 1978-79.

TOGO

Ministerial

Minister of National Defence:
General Gnassingbe Eyadema (President)

Senior Officer

Commanding Officer, Navy:
Commander Lucien Laval

Personnel

(a) 1981: 200
(b) Voluntary service

Base

Lome

Mercantile Marine

Lloyd's Register of Shipping:
5 vessels of 25 395 tons gross

LIGHT FORCES

2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
MONO	—	Chantiers Navals de l'Esterel	1976
KARA	—	Chantiers Navals de l'Esterel	1976

Displacement, tons: 80
Dimensions, feet (metres): 105 × 19 × 5·3 *(32 × 5·8 × 1·6)*
Missiles: Can carry SS-12
Guns: 1—40 mm Bofors (aft); 1—20 mm
Main engines: 2 MTU diesels; 2 700 bhp; 2 shafts = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 17

Radar: One navigation set.

Note: Unconfirmed report of two other patrol craft.

MONO and KARA *1976, Ch. Navals de l'Esterel*

TONGA

On 10 March 1973 King Taufa 'ahau Tupou IV commissioned the first craft of Tonga's Maritime Force, a necessary service in a Kingdom of seven main groups of islands spread over 270 square miles.

Mercantile Marine

Lloyd's Register of Shipping:
16 vessels of 14 886 tons gross

LIGHT FORCES

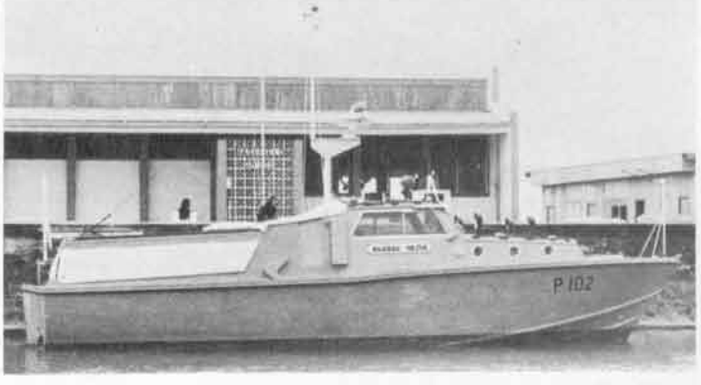
2 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
NGAHAU KOULA	P 101	Brooke Marine, Lowestoft	10 Mar 1973
NGAHAU SILIVA	P 102	Brooke Marine, Lowestoft	10 May 1976

Displacement, tons: 15
Dimensions, feet (metres): 45 × 13 × 3·8 *(13·7 × 4 × 1·2)*
Guns: 2—·5 Browning MGs
Main engines: 2 Cummins V8 diesels; 2 shafts = 21 knots
Range, miles: 800 (101), 1 000 (102)
Complement: 7

DF and echo-sounder (Ferrograph). Manned by volunteers from the Maritime Defence Division Tongan Defence Service. *Ngahau Siliva* was completed 2 February 1976 and commissioned by HM Queen Halaevalu Mata'aho in May. Names mean Golden and Silver Arrow respectively.

Radar: Decca 101.



NGAHAU SILIVA *1977, Royal Tongan Defence Service*

TRINIDAD AND TOBAGO

Ministerial

Minister of National Security:
Senator John Donaldson

Headquarters' Appointment

Commanding Officer:
Commander M. O. Williams, MOM

Personnel

(a) 1981: 426 (38 officers, 388 ratings)
(b) Voluntary service

Base

Staubles Bay

Prefix to Ship's Names

T.T.S.

Mercantile Marine

Lloyd's Register of Shipping:
41 vessels of 17 456 tons gross

DELETIONS

1975-76 *Sea Hawk* and *Sea Scout*
1976 *CG 6, 7* and *8*

LIGHT FORCES

2 TYPE CG 40 (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BARRACUDA	CG 5	Karlskrona Varvet	15 June 1980
CASCADURA	CG 6	Karlskrona Varvet	15 June 1980

Displacement, tons: 200
Dimensions, feet (metres): 133·2 × 21·9 × 5·2 *(40·6 × 6·7 × 1·6)*
Guns: 1—40 mm, 1—20 mm
Main engines: 2 Paxman Valenta 16 RP200 diesels; 8 000 hp = 27 knots
Range, miles: 3 000 at 15/20 knots
Complement: 22

Ordered in Sweden mid-1978. Laid down early 1979. Fitted with foam-cannon oil pollution equipment and for oceanographic and hydrographic work. Nine spare berths. The hull is similar to Swedish "Spica" class but with the bridge amidships.

TYPE CG 40 *1980, Trinidad and Tobago Coast Guard*

2 LATER VOSPER TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
CHAGUARAMAS	CG 3	Vosper Ltd, Portsmouth	18 Mar 1972
BUCCOO REEF	CG 4	Vosper Ltd, Portsmouth	18 Mar 1972

Displacement, tons: 100 standard; 125 full load
Dimensions, feet (metres): 103 × 19·8 × 5·8 *(31·5 × 5·9 × 1·8)*
Gun: 1—20 mm Hispano Suiza
Main engines: 2 Paxman Ventura diesels; 2 900 bhp = 24 knots
Oil fuel, tons: 20
Range, miles: 2 000 at 13 knots
Complement: 19 (3 officers, 16 ratings)

Chaguaramas was laid down on 1 February 1971 and launched on 29 March 1971. Fitted with air-conditioning and roll-damping. Both commissioned at Portsmouth, England.

CHAGUARAMAS *1975, Trinidad and Tobago Coast Guard*

2 VOSPER TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
TRINITY	CG 1	Vosper Ltd, Portsmouth	20 Feb 1965
COURLAND BAY	CG 2	Vosper Ltd, Portsmouth	20 Feb 1965

Displacement, tons: 96 standard; 123 full load
Dimensions, feet (metres): 102·6 × 19·7 × 5·5 *(31·4 × 5·9 × 1·7)*
Gun: 1—40 mm Bofors
Main engines: 2 12-cyl Paxman Ventura YJCM turbo-charged diesels; 2 910 bhp = 24·5 knots
Oil fuel, tons: 18
Range, miles: 1 800 at 13·5 knots
Complement: 17 (3 officers, 14 ratings)

Designed by Vosper Limited, Portsmouth. Of steel construction with aluminium alloy superstructure. The boats are air-conditioned throughout except the engine room. Vosper roll-damping equipment is fitted. Laid down October 1963. *Trinity* was launched on 14 April 1964. *Trinity* is named after Trinity Hills, so named by Columbus on making his landfall in 1498, and *Courland Bay* after a bay in Tobago where a settlement was founded by the Duke of Courland in the 17th century. Both commissioned at Portsmouth, England.

TRINITY *1975, Trinidad and Tobago Coast Guard*

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
EL TUCUCHE	—	Tugs and Lighters Ltd	1977

Length, feet (metres): 55 *(16·7)*
Main engines: 2 General Motors TL 71 diesels
Complement: 6

EL TUCUCHE *1975, Trinidad and Tobago Coast Guard*

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
NAPARIMA	—	Tugs and Lighters, Port of Spain	13 Aug 1976

Dimensions, feet (metres): 50 × 16 × 8 *(15·2 × 4·9 × 2·4)*
Main engines: 2 General Motors 8V 71 diesels; 460 bhp
Complement: 5

1 COASTAL PATROL CRAFT

CG 9

Locally built of glass fibre, 23 ft long with one Caterpillar diesel. Capable of 27 knots. Used for inshore patrol work, mainly in the Gulf of Paria.

1 SAIL TRAINING SHIP

HUMMING BIRD II

40 ft cutter-rigged ketch with three-cylinder Lister auxiliary diesel. Built in Trinidad 1966.

POLICE CRAFT

Senior officer	**Base**
A/Supt. Cuffy	Chaguaramas

2 FAIREY "SWORD" CLASS (COASTAL PATROL CRAFT)

FOX **SEA SPRAY**

Displacement, tons: 15·5
Dimensions, feet (metres): 44·9 × 13·4 × 4·3 *(13·7 × 4·1 × 1·3)*
Gun: 1—7·62 mm
Main engines: 2 diesels; 850 hp = 28 knots
Range, miles: 500 cruising
Complement: 6

First delivered by Fairey Marine, Hamble January 1978. Second delivered 1979. Recessed cockpit aft in *Sea Spray*.

"SWORD" Class *1977, Fairey Marine*

1 COASTAL PATROL CRAFT

SEA DRAGON

Displacement, tons: 14·9
Dimensions, feet (metres): 45 × 14 × 4 *(13·7 × 4·1 × 1·2)*
Guns: 2—7·62 mm
Main engines: 2 General Motors 8V92 diesels; 700 hp; 2 shafts = 23·5 knots
Range, miles: 360 cruising
Complement: 4

Built in 1980 by Watercraft, Shoreham, Sussex. GRP hull.

SEA DRAGON *1980, Watercraft.*

TUNISIA

Headquarters' Appointment

Chief of Naval Staff:
Capitaine Habib Fedhila

Diplomatic Representation

Defence Attaché in Paris (and for London):
Rear-Admiral B. Jedidi

Personnel

(a) 1981: 2 600 officers and men
(b) 1 year's national service

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Frigate	1	—
Fast Attack Craft—Gun	2	2 (71)
MSCs	2	—
Large Patrol Craft	6	—
Coastal Patrol Craft	10	—
Tug	1	—

Mercantile Marine

Lloyd's Register of Shipping:
43 vessels of 131 079 tons gross

FRIGATE

1 Ex-US "SAVAGE" CLASS

Name	*No.*	*Builders*	*Commissioned*
PRÉSIDENT BOURGUIBA (ex-USS *Thomas J. Gary* DER 326, ex-DE 326)	E 7	Consolidated Steel Corporation	27 Nov 1943

Displacement, tons: 1 200 standard; 1 490 full load
Dimensions, feet (metres): 306 × 35 × 14 *(93·3 × 10·7 × 4·3)*
Guns: 2—3 in *(76 mm)*/50; 2—20 mm
A/S weapon: 6 (2 triple) Mk 32 A/S torpedo tubes
Main engines: 4 diesels; 6 000 bhp; 2 shafts = 19 knots
Complement: 169

Completed as "Edsall" class DE. Converted to Radar Picket "Savage" class in 1958. Transferred 27 October 1973.

Radar: SPS 29 and SPS 10.

PRÉSIDENT BOURGUIBA *9/1980, Commander Aldo Fraccaroli*

COASTAL MINESWEEPERS

2 Ex-US "ADJUTANT" CLASS

Name	*No.*	*Builders*	*Commissioned*
HANNIBAL (ex-*Coquelicot*, ex-USN *MSC 84*)	—	Stephen Bros, Calif	May 1953
SOUSSE (ex-*Marjolaine*, ex-USN *MSC 66*)	—	Harbor B.B. Co, Calif	Mar 1953

Displacement, tons: 320 standard; 375 full load
Dimensions, feet (metres): 144 × 27 × 8·3 *(43·8 × 8·2 × 2·5)*
Gun: 1—20 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 200 bhp = 13 knots
Oil fuel, tons: 40
Range, miles: 2 500 at 10 knots
Complement: 38

Built for France under MDAP; *Hannibal* transferred to Tunisia in 1973. *Sousse* transferred July 1977. Of French "Acacia" class. Currently in use for patrol duties and fishery protection.

HANNIBAL *1974, Tunisian Navy*

LIGHT FORCES

0 + 2 +?1 "PB 57" TYPE (FAST ATTACK CRAFT)

Reported as ordered from Lürssen, Vegesack in mid-1980.

2 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

GAFSAH 305 **AMILCARE**

Displacement, tons: 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin); 4—25 mm (twin)
Main engines: 4 M50F diesels; 4 800 hp; 4 shafts = 30 knots
Range, miles: 800 at 17 knots
Complement: 25

Transferred late 1977.

Radar: Search: Skin Head.

"SHANGHAI II" Class

1 Ex-FRENCH "LE FOUGEUX" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
SAKIET SIDI YOUSSEF (ex-*UW 12*)	P 303	Dubigeon, Nantes	1956

Displacement, tons: 325 standard; 400 full load
Dimensions, feet (metres): 173·9 × 24 × 10·2 *(53 × 7·3 × 3·1)*
Guns: 1—40 mm; 2—20 mm
A/S weapons: Mousetrap; 4 DCTs; 2 DC racks
Main engines: 4 SEMT-Pielstick diesels; 2 shafts; 3 240 bhp = 18 knots
Range, miles: 2 000 at 15 knots
Complement: 46 (4 officers, 42 men)

Built in France, under US off-shore order. Purchased by West Germany in 1957 and served as A/S trials vessel. Transferred to Tunisia in December 1969.

Radar: One Decca.

Sonar: One QCU 2.

SAKIET SIDI YOUSSEF *1980, L. and L. van Ginderen*

2 VOSPER THORNYCROFT TYPE (FAST ATTACK CRAFT—PATROL)

Name	*No.*	*Builders*	*Commissioned*
TAZARKA	P 205	Vosper Thornycroft	27 Oct 1977
MENZEL BOURGUIBA	P 206	Vosper Thornycroft	27 Oct 1977

Displacement, tons: 120
Dimensions, feet (metres): 103 × 19·5 × 5·5 *(31·4 × 5·9 × 1·7)*
Guns: 2—20 mm
Main engines: 2 diesels; 4 000 hp = 27 knots
Range, miles: 1 500 cruising
Complement: 24

Ordered 9 September 1975. P205 laid down 23 March 1976 and launched 19 July 1976.

TAZARKA *10/1977 Michael D. J. Lennon*

3 "P 48" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BIZERTE	P 301	Ch. Franco-Belges (Villeneuve, la Garenne)	10 July 1970
HORRIA (ex-*Liberté*)	P 302	Ch. Franco-Belges (Villeneuve, la Garenne)	Oct 1970
MONASTIR	P 304	Soc. Francaise Constructions Navale	25 Mar 1975

Displacement, tons: 250
Dimensions, feet (metres): 157·5 × 23·3 × 7·5 *(48 × 7·1 × 2·3)*
Missiles: 8—SS 12
Guns: 2—40 mm
Main engines: 2 MTU diesels; 4 400 bhp = 20 knots
Range, miles: 2 000 at 16 knots

First pair ordered in 1968. *Bizerte* was launched on 20 November 1969. *Horria* launched 12 February 1970. *Monastir* ordered in August 1973, laid down January 1974, launched 25 June 1974, completed 20 February 1975.

HORRIA *1974, Tunisian Navy*

4 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
ISTIKLAL (ex-*VC 11, P 761*)	P 201	Ch. Navals de l'Esterel	1957
JOUMHOURIA	P 202	Ch. Navals de l'Esterel	1961
AL JALA	P 203	Ch. Navals de l'Esterel	Nov 1963
REMADA	P 204	Ch. Navals de l'Esterel	July 1967

Displacement, tons: 60 standard; 80 full load
Dimensions, feet (metres): 104 × 19 × 5·3 *(31·5 × 5·8 × 1·6)*
Gun: 1—20 mm
Main engines: 2 MTU 12V 493 Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 17

Istiklal transferred from France March 1959.

6 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
—	V 101	Ch. Navals de l'Esterel	1961
—	V 102	Ch. Navals de l'Esterel	1961
—	V 103	Ch. Navals de l'Esterel	1962
—	V 104	Ch. Navals de l'Esterel	1962
—	V 105	Ch. Navals de l'Esterel	1963
—	V 106	Ch. Navals de l'Esterel	1963

Displacement, tons: 38 full load
Dimensions, feet (metres): 83 × 15·6 × 4·2 *(25 × 4·8 × 1·3)*
Gun: 1—20 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 880 hp = 23 knots
Range, miles: 900 at 15 knots
Complement: 11

Two further craft of the same design *(Sabaq el Bahr* T 2 and *Jaouel el Bahr* T 1) but unarmed were supplied to the Fisheries Administration in 1958 by the same builders.

V 105 *1974, Tunisian Navy*

TUG

Name	*No.*	*Builders*	*Commissioned*
RAS ADAR (ex-*Zeeland*, ex-*Pan America*, ex-*Ocean Pride*, ex-HMS *Oriana*, BAT 1)	—	Gulfport Boilerworks & Eng Co	1942

Displacement, tons: 534 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Main engines: Diesel-electric; 1 shaft; 1 500 hp = 13 knots

Built in 1942 and lend leased to the Royal Navy in that year as BAT 1 HMS *Oriana*, returned and sold in 1946 as *Ocean Pride*, then *Pan America* in 1947, then *Zeeland* in 1956. Transferred 1968.

TURKEY

Headquarters' Appointment

Commander in Chief, Turkish Naval Forces:
Admiral Nejat Tümer

Senior Command

Fleet Commander:
Admiral Nejat Serim

Diplomatic Representation

Naval Attaché in Athens:
Commander E. Oğuz
Naval Attaché in Bonn:
Commander I. Güven
Naval Attaché in London:
Commander U. Kivanc
Naval Attaché in Moscow:
Commander Y. Akgün
Naval Attaché in Oslo:
Captain A. Şenkul
Naval Attaché in Paris:
Captain H. Eroğlu
Naval Attaché in Rome:
Commander A. Tok
Naval Attaché in Tokyo:
Captain O. Özdemir
Naval Attaché in Washington:
Commander T. Yalcindağ

Personnel

(a) 1981: 45 000 officers and ratings
(b) 20 months' national service

Naval Bases

Headquarters: Ankara
Main Naval Base: Gölçük
Senior Flag Officers: Istanbul, Izmir
Other Flag Officers: Ereğli, Bosphorus, Heybeliada (Training), Dardanelles, Iskenderun
Dockyards: Gölçük, Taşkizak (Istanbul)

Naval Air Arm

4 AB-212 Helicopters (5 on order)
3 AB-204B Helicopters
8 S-2A and 12 S-2E ASW Aircraft
2 TS-2A Training Aircraft

Mercantile Marine

Lloyd's Register of Shipping:
508 vessels of 1 454 838 tons gross

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines—Patrol	16	1 (+7?)
Destroyers	14	—
Frigates	2	—
Fast Attack Craft—Missile	13	4
Fast Attack Craft—Gun	1	—
Fast Attack Craft—Torpedo	7	—
Large Patrol Craft	49	8
Coastal Patrol Craft	4	—
Minelayer—Large	1	—
Minelayers—Coastal	6	—
Minesweepers—Coastal	22	—
Minesweepers—Inshore	4	—
Minehunting Boats	9	—
LSTs	5	?
LCTs	34	—
LCUs	16	—
LCMs	20	—
Support Tankers	5	—
Harbour Tanker	4	—
Water Tankers	9	—
Repair Ships	2	—
Transports	10	—
Submarine Rescue/Ships	3	—
BDVs	4	—
Gate Vessels	3	—
Tugs—Ocean	4	—
Tugs—Harbour	10	—
Floating Docks	7	—
Training Ships and Craft	6	—
Survey Vessels	5	—
Depot Ships	3	—
Auxiliaries	25	—

DELETIONS

Submarines

(Most replaced by submarines of same name).

1974 *Gür* (ex-*Chub*), *Sakarya* (ex-*Boarfish*)
1977 *Dumlupinar, Hizir Reis, Turgut Reis*

Destroyers

1974 *Kocatepe* (ex-USS *Harwood*) sunk on 22 July
1976 *Gelibolu*
1980 *Izmit*

Corvettes

1974 *Çardak, Çesme, Edincik* (ex-MSF)
1975 *Alanya, Ayvalik*

Boom Defence Vessels

1975 *AG 2, AG 3, Kaldaray*

Survey Craft

1979 *Mesaha 3*

PENNANT LIST

Submarines

S 333	Ikinci Inönü
S 335	Burak Reis
S 336	Murat Reis
S 337	Oruc Reis
S 338	Uluç Ali Reis
S 339	Dumlupinar
S 340	Çerbe
S 341	Çanakkale
S 342	Turgut Reis
S 343	Piri Reis
S 345	Preveze
S 346	Birinci Inönü
S 347	Atilay
S 348	Saldiray
S 349	Batiray
S 350	Yildiray
S 351	—

Destroyers

D 340	Istanbul
D 341	Izmir
D 343	Iskenderun
D 344	Içel
D 347	Gemlik
D 349	Kiliç Ali Paşa
D 350	Piyak Paşa
D 351	M. Fevzi Çakmak
D 352	Gayret
D 353	Adatepe
D 354	Kocatepe
D 355	Tinaztepe
D 356	Zafer
DM 357	Muavenet

Frigates

D 358	Berk
D 359	Peyk

Mine Warfare Forces (Layers)

N 101	Mordogan
N 102	Meriç
N 103	Marmaris
N 104	Mersin
N 105	Mürefte
N 110	Nusret
N 115	Mehmetcik
NL 112	Çakabey
NL 120	Bayraktar
NL 123	Sancaktar

Mine Warfare Forces (Sweepers)

M 500	Foça
M 501	Fethiye
M 502	Fatsa
M 503	Finike
M 507	Seymen
M 508	Selcuk
M 509	Seyhan
M 510	Samsun
M 511	Sinop
M 512	Surmene
M 513	Seddulbahir
M 514	Silifke
M 515	Saros
M 516	Sigacik
M 517	Sapanca
M 518	Sariyer
M 520	Karamürsel
M 521	Kerempe
M 522	Kilimli
M 523	Kozlu
M 524	Kuşadasi
M 525	Kemer
M 530	Trabzon
M 531	Terme
M 532	Tirebolu
M 533	Tekirdag

Amphibious Forces

Ç 101	LCT
Ç 103-129	LCTs
Ç 132-138	LCTs
Ç 201-216	LCUs
Ç 301-320	LCMs
L 401	Ertugrul
L 402	Serdar

Light Forces

J 12-30	Large Patrol Craft
J 34	Large Patrol Craft
J 61-66	Large Patrol Craft
P 111	Sultanhisar
P 112	Demirhisar
P 113	Yarhisar
P 114	Akhisar
P 115	Sivrihisar
P 116	Koçhisar
P 140	Girne
P 301	AG 1 (BDV)
P 304	AG 4 (BDV)
P 305	AG 5 (BDV)
P 306	AG 6 (BDV)
P 311-14	MTB 1-4

Light Forces

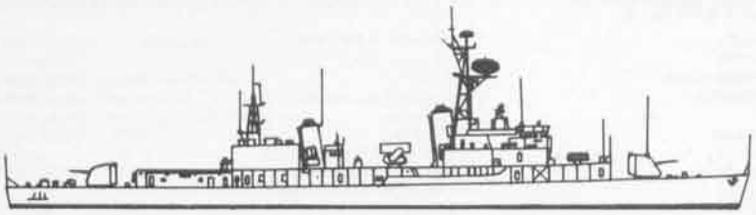
P 316-20	MTB 6-10
P 321	Denizkusu
P 322	Atmaca
P 323	Sahin
P 324	Kartal
P 325	Meltem
P 326	Pelikan
P 327	Albatros
P 328	Şimşek
P 329	Kasirga
P 330	Firtina
P 331	Tufan
P 332	Kiliç
P 333	Mizrak
P 334	Yildiz
P 335	Kalkan
P 336	Karayel
P 338	Yildirim
P 339	Bora
P 340	Dogan
P 341	Marti
P 342	Tayfun
P 343	Volkan
P 1209-12	LS 9-12
P 1221-35	AB 21-35

Service Forces

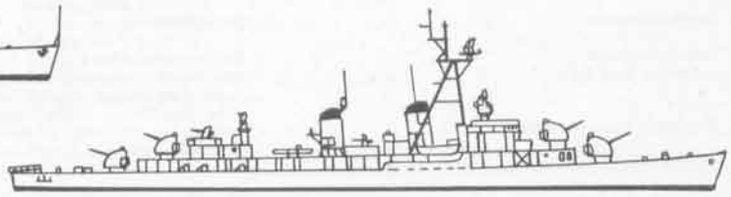
A 570	Akar
A 571	Yuzbaşi Tolunay
A 572	Albay Hakki Burak
A 573	Binbaşi Saadettin Gürçan
A 574	Akpinar
A 575	Inebolu
A 579	Cezayirli Gazi Hasan Paşa
A 581	Onaran
A 582	Başaran
A 583	Donatan
A 584	Kurtaran
A 585	Akin
A 586	Ülkü
A 587	Gazal
A 588	Umur Bey
A 589	Işin
A 593	Çandarli (survey)
A 594	Çarşamba (survey)
A 599	Erkin
Y 1021-1023	Algarna 1-3
Y 1024	Turgut Alp
Y 1029	Tarak
Y 1031-1043	Salopa 1-13
Y 1052	Takip

Service Forces

Y 1081-1087	Floating Docks
Y 1096-1097	Işçi Taşiti 1-2
Y 1099	Gonca
Y 1100	Toros
Y 1101	Atak
Y 1108-9	LS 5 and 6 (HDMLs)
Y 1117	Sonduren
Y 1118	Kepez
Y 1119	Akbaş
Y 1121	Yedekci
Y 1122	Kuvvet
Y 1123	Öncü
Y 1124	Onder
Y 1130	Güven
Y 1132	Atil
Y 1133	Doğanarslan
Y 1134	Ersev Bayrak
Y 1148-1149	Samandira 1-2
Y 1155	Kanarya
Y 1156	Sarkoy
Y 1163	Lapseki
Y 1164	Erdek
Y 1165	Eceabat
Y 1166	Kilya
Y 1168	Tuzla
Y 1181-1193	Mavna 1-13
Y 1194-1195	Cephan 1-2
Y 1196	Bekirdere
Y 1198-1199	Mavna 14-15
Y 1201-1203	Kapi Gemisi 1-3
Y 1204	Naşit Ongeren
Y 1205	Binbaşi Metin Sülüs
Y 1207	Gölçük
Y 1208	Van
Y 1209	Ulubat
Y 1211-1216	Pinar 1-6
Y 1217	Soğut
Y 1221-1222	Mesaha 1-2
Y 1224	Mesaha 4
Y 1228	Odev
Y 1229	Kudret
Y 1231-1233	H 500-502
Y 1235	Poyraz



Ex-US "GEARING" Class



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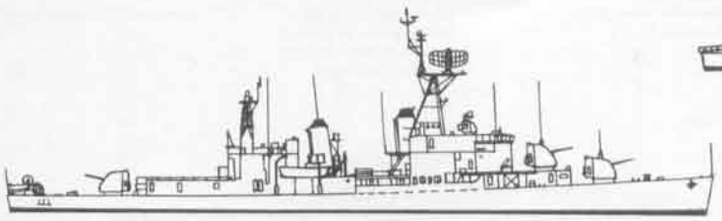


ZAFER

SUBMARINES

Notes: (a) Three old submarines are moored at Gölcük as accommodation ships.
(b) At Gölcük two old submarines provide shore power. Ex-*Piri Reis*, now Y 1242 and ex-*Preveze*, now Y 1243 are known as Cereyan Botu 3 and 4.

4 + 1 + (?7) TYPE 209 (HOWALDTSWERKE)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ATILAY	S 347	Howaldtswerke, Kiel	2 Aug 1972	23 Oct 1974	29 July 1975
SALDIRAY	S 348	Howaldtswerke, Kiel	1973	14 Feb 1975	16 Jan 1977
BATIRAY	S 349	Howaldtswerke, Kiel	11 June 1975	1977	20 July 1978
YILDIRAY	S 350	Gölcük	—	20 July 1979	July 1980
—	S 351	Gölcük	21 Mar 1980	—	1982

Displacement, tons: 990 surfaced; 1 290 dived
Dimensions, feet (metres): 183·7 × 20·3 × 17·9 *(56 × 6·2 × 5·5)*
Torpedo tubes: 8—21 in (with reloads)
Main machinery: Diesel-electric; 4 MTU Siemens diesel-generators; 1 Siemens electric motor; 1 shaft
Speed, knots: 10 surfaced; 22 dived
Range: 50 days
Complement: 31

Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal, Essen all acting as a consortium.
A single-hull design with two ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. The single screw is slow revving. Very high capacity batteries with GRP lead-acid cells and battery cooling—by Wilh. Hagen. Active and passive sonar, sonar detection equipment, sound gear and underwater telephone.

BATIRAY *7/1980, Selçuk Emre*

Fitted with two periscopes, radar and Omega receiver. Foreplanes retract. *Saldiray* completed 21 October 1975 but was not taken over until January 1977. *Batiray* arrived Turkey 29 September 1978.

Future construction: Two of this class are the first submarines ever built in Turkey. Up to a total of twelve is planned.

Torpedo fire control: Hollandse Signaal M8.

2 Ex-US "GUPPY III" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
ÇANAKKALE (ex-USS *Cobbler* SS 344)	S 341	Electric Boat Co	3 Apr 1944	1 Apr 1945	8 Aug 1945
IKINCI INONÜ (ex-USS *Corporal* SS 346)	S 333	Electric Boat Co	27 Apr 1944	10 June 1945	9 Nov 1945

Displacement, tons: 1 975 standard; 2 540 dived
Dimensions, feet (metres): 326·5 × 27 × 17 *(99·4 × 8·2 × 5·2)*
Torpedo tubes: 10—21 in *(533 mm)* 6 bow, 4 stern
Main machinery: 4 diesels; 6 400 shp; 2 electric motors; 5 400 bhp; 2 shafts
Speed: 20 surfaced; 15 dived
Complement: 86

Transferred 21 November 1973.

ÇANAKKALE *1979, Selçuk Emre*

7 Ex-US "GUPPY II A" and 1 Ex-US "GUPPY 1A" CLASSES

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BURAK REIS (ex-USS *Seafox*, SS 402)	S 335	Portsmouth Navy Yard	2 Nov 1943	28 Mar 1944	13 June 1944
MURAT REIS (ex-USS *Razorback*, SS 394)	S 336	Portsmouth Navy Yard	9 Sep 1943	27 Jan 1944	3 Apr 1944
ORUÇ REIS (ex-USS *Pomfret*, SS 391)	S 337	Portsmouth Navy Yard	14 July 1943	27 Oct 1943	19 Feb 1944
ULUÇ ALI REIS (ex-USS *Thornback*, SS 418)	S 338	Portsmouth Navy Yard	5 Apr 1944	7July 1944	13 Oct 1944
*__DUMLUPINAR__ (ex-USS *Caiman*, SS 323)	S 339	Electric Boat Co	1 Oct 1943	30 Mar 1944	17 July 1944
ÇERBE (ex-USS *Trutta*, SS 421)	S 340	Portsmouth Navy Yard	22 Dec 1943	22 May 1944	16 Nov 1944
PREVEZE (ex-USS *Entemedor*, SS 340)	S 345	Electric Boat Co	3 Feb 1944	17 Dec 1944	6 Apr 1945
BIRINCI INONÜ (ex-USS *Threadfin*, SS 410)	S 346	Portsmouth Navy Yard	18 Mar 1944	26 June 1944	30 Aug 1944

* "Guppy 1A" class

Displacement, tons: 1 840 standard; 2 445 (2 440; *Dumlupinar*) dived
Dimensions, feet (metres): 306 × 27 × 17 *(93·2 × 8·2 × 5·2)* (308—*93·9*; *Dumlupinar*)
Torpedo tubes: 10—21 in *(533 mm)* (6 bow, 4 stern); 24 torpedoes carried
Main machinery: 3 General Motors diesels; 4 800 hp; 2 electric motors; 5 400 hp
Speed, knots: 18 surfaced; 15 dived
Range, miles: 12 000 at 10 knots surfaced
Complement: 85

The fact that the same names are used for replacement submarines as for their predecessors can be confusing, eg *"Cerbe"* was used for both ex-USS *Hammerhead* and now for ex-USS *Trutta*.

ULUÇ ALI REIS *9/1980, Selçuk Emre*

Dumlupinar, after a series of adventures, is now back in commission.

Transfers: *Burak Reis* December 1970, *Murat Reis* 17 November 1970, *Oruç Reis* 3 May 1972, *Çerbe*, June 1972, *Dumlupinar* 24 August 1972, *Preveze*, *Uluç Ali Reis* 24 August 1973, *Birinci Inönü* 15 August 1973.

1 Ex-US "MOD BALAO" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TURGUT REIS (ex-USS *Bergall*, SS 320)	S 342	Electric Boat Co	1943	16 Feb 1944	12 June 1944

Displacement, tons: 1 829 surfaced; 2 424 dived
Dimensions, feet (metres): 311·8 × 27·2 × 13·8 *(95 × 8·3 × 4·2)*
Torpedo tubes: 10—21 in *(533 mm)* (6 bow, 4 stern), (24 torpedoes carried)
Main machinery: 4 General Motors diesels; 6 400 shp; 2 electric motors; 5 400 shp
Speed, knots: 20 surfaced; 10 dived
Range, miles: 12 000 at 10 (surfaced)
Complement: 85

Transferred 17 October 1958. Purchased 15 August 1973.

1 Ex-US "TANG" CLASS (PATROL SUBMARINE)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PIRI REIS (ex-USS *Tang*, SS 563)	S 343	Portsmouth Navy Yard	18 Apr 1949	Apr 1951	25 Oct 1951

Displacement, tons: 2 100 surfaced; 2 700 dived
Dimensions, feet (metres): 287 × 27·3 × 19 *(87·4 × 8·3 × 6·2)*
Torpedo tubes: 8—21 in *(533 mm)* (6 fwd, 2 aft)
Main machinery: 3 diesels; 4 500 bhp; 2 electric motors; 5 600 shp; 2 shafts
Speed, knots: 16 surfaced; 16 dived
Complement: 87 (8 officers, 79 men)

Transferred January 1980—commissioned 21 March 1980. On loan for five years.

PIRI REIS *3/1980, Selçuk Emre*

DESTROYERS

Note: *Gemlik* D 347 is in use as a training tender for the Engineering School at Derince.

8 Ex-US "GEARING (FRAM I and II)" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
KILIÇ ALI PAŞA (ex-USS *Robert H. McCard*, DD 822)	D 349	Consolidated Steel Corporation	26 June 1945	9 Nov 1945	26 Oct 1946
PIYALE PAŞA (ex-USS *Fiske*, DD 842)	D 350	Bath Iron Works	9 Apr 1945	8 Sep 1945	28 Nov 1945
M. FEVZI ÇAKMAK (ex-USS *Charles H. Roan*, DD 853)	D 351	Bethlehem Steel Corporation, Quincy	1944	15 May 1945	12 Sep 1946
GAYRET (ex-USS *Eversole*, DD 789)	D 352	Todd Pacific Shipyard	1945	8 Jan 1946	10 July 1946
ADATEPE (ex-USS *Forrest Royal*, DD 872)	D 353	Bethlehem, Staten Island	1945	17 Jan 1946	28 June 1946
KOCATEPE (ex-USS *Norris*, DD 859)	D 354	Bethlehem Steel Corporation, San Pedro	1944	25 Feb 1945	9 June 1945
TINAZTEPE (ex-USS *Keppler*, DD 765)	D 355	Bethlehem Steel Corporation, San Francisco	1944	24 June 1945	23 May 1947
— (ex-USS *Meredith*, DD 890)	—	Consolidated Steel Corporation	27 Jan 1945	28 June 1945	31 Dec 1945

Displacement, tons: 2 425 standard; 3 500 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19 *(119 × 12·6 × 5·8)*
Aircraft: Helicopter deck and hangar
Guns: 4—5 in *(127 mm)*/38 (twin Mk 38); 2—40 mm (twin) (all); 2—35 mm (twin) plus 2—40 mm (single amidships) (in non/Asroc ships) (see *Guns* note)
A/S weapons: FRAM I; 1 Asroc 8-tube launcher; 2 triple torpedo tubes (Mk 32); FRAM II; 1 trainable Hedgehog; 2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines; 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 32·5
Oil fuel, tons: 650
Range, miles: 5 800 at 15 knots; 2 400 at 25 knots
Complement: 275 (15 officers, 260 ratings)

Kocatepe and *Tinaztepe* FRAM II conversions—remainder FRAM I. Transfers to Turkey took place on 27 March 1971 *(Adatepe)* 30 June 1972 *(Tinaztepe)* 11 July 1973 *(Gayret)* and 21 September 1973 *(Çakmak)*, *Adatepe* purchased 15 February 1973 and *Kocatepe* 7 July 1974, commissioned 24 July 1975. *Kiliç Ali Paşa* and *Piyale Paşa* leased 5 June 1980, ex-*Meredith* purchased 7 December 1979.

Fire control: GFCS Mk 37 with Mk 25 radar.

Guns: 76 mm fitted on flight deck of several ships.

Radar: Long range air search: SPS 40 (FRAM I) SPS 6 (FRAM II). Surface search: SPS 10.

Replacement: The previous *Kocatepe* D 354 was sunk 22 July 1974. USS *Norris* had been purchased for spares on 7 July 1974 and has been re-activated to replace *Kocatepe*.

Sonar: FRAM I: SQS 23. FRAM II: SQS 29 series.

KOCATEPE *1979, Selçuk Emre*

M. FEVZI ÇAKMAK *3/1980, Selçuk Emre*

1 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ZAFER (ex-USS *Hugh Purvis* DD 709)	D 356	Federal S.B. and D.D. Co	1944	17 Dec 1944	1 Mar 1945

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·5 × 5·8)*
Guns: 6—5 in/38 (twin Mk 38); 1—76 mm OTO Melara (flight deck); 4—40 mm (2 twin Mk 1); 2—35 mm (twin)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes; 2 Hedgehogs
Main engines: 2 geared turbines; 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Oil fuel, tons: 650
Range, miles: 4 600 at 15 knots
Complement: 275 (15 officers, 260 ratings)

Zafer is of "Allen M. Sumner" class of modified FRAM II having been used as a US Navy trials ship for planar passive sonar. There is an extra deck-house on the hangar. Purchased 15 February 1972.

Fire control: Mk 51 for 40 mm.

Guns: Six 40 mm added in 1977—two twins amidships and two singles on flight deck. The two single 40 mm on flight deck replaced by one 76 mm in 1979.

ZAFER *1978, Turkish Navy*

Radar: Air search: SPS 37.
Surface search: SPS 10.

Sonar: SQS 29 series.

1 Ex-US "ROBERT H. SMITH" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MUAVENET (ex-USS *Gwin*, ex-*MMD 33*, ex-*DM 33*, ex-*DD 772*)	DM 357	Bethlehem Steel Corporation, San Pedro	1943	9 Apr 1944	30 Sep 1944

Displacement, tons: 2 250 standard; 3 375 full load
Dimensions, feet (metres): 376·5 × 41 × 19 *(114·8 × 12·5 × 5·8)*
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38); 12—40 mm/60 (2 quad Mk 2, 2 twin Mk 1); 11—20 mm/70
Mines: 80
Main engines: Geared turbines; 60 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Range, miles: 4 600 at 15 knots
Complement: 274

Modified "Allen M. Sumner" class converted for minelaying. After modernisation at Philadelphia she was transferred on 22 October 1971.

Fire control: GFCS director Mk 37 with Mk 28 radar; Mk 34 director for Mk 51 GFCS for a quad 40 mm.

Radar: Air search: SPS 6.
Surface search: SPS 10.

MUAVENET *1/1980, Selçuk Emre*

Sonar: QCU or QHB.

4 Ex-US "FLETCHER" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ISTANBUL (ex-USS *Clarence K. Bronson*, DD 668)	D 340	Federal S.B. & D.D. Co, Newark	1942	18 Apr 1943	11 June 1943
IZMIR (ex-USS *Van Valkenburgh*, DD 656)	D 341	Gulf Shipbuilding Corporation	1943	19 Dec 1943	2 Aug 1944
ISKENDERUN (ex-USS *Boyd*, DD 544)	D 343	Bethlehem Steel Corporation, San Pedro	1942	29 Oct 1942	8 May 1943
IÇEL (ex-USS *Preston*, DD 795)	D 344	Bethlehem Steel Corporation, San Pedro	1943	12 Dec 1943	20 Mar 1944

Displacement, tons: 2 050 standard; 3 000 full load
Dimensions, feet (metres): 376·5 × 39·5 × 18 *(114·8 × 12·1 × 5·5)*
Guns: 4—5 in *(127 mm)*/38 (single Mk 30); 6—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 2 Hedgehogs
Torpedo tubes: 5—21 in *(533 mm)* (quin)
Main engines: GE geared turbines; 2 shafts; 60 000 shp
Boilers: 4 Babcock & Wilcox
Speed, knots: 34
Oil fuel, tons: 650
Range, miles: 5 000 at 15 knots
Complement: 250

Fire control: Mk 37 GFCS forward with Mk 25 radar. Mk 56 GFCS aft with Mk 35 radar. Two Mk 51 GFCS amidships.

IÇEL *3/1980, Selçuk Emre*

Radar: Search: SPS 6.
Tactical: SPS 10.

Transfers: Transferred as follows: *Istanbul* 14 January 1967, *Izmir* 28 February 1967, *Iskenderun* 1 October 1969, and *Içel* 15 November 1969.

FRIGATES

2 "BERK" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
BERK	D 358	Gölcük Naval Yard	9 Mar 1967	25 June 1971	12 July 1972
PEYK	D 359	Gölcük Naval Yard	18 Jan 1968	7 June 1972	24 July 1975

Displacement, tons: 1 450 standard; 1 950 full load
Dimensions, feet (metres): 311·7 × 38·7 × 18·1 *(95 × 11·8 × 5·5)*
Aircraft: 1 helicopter
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 6 (2 triple) Mk 32 A/S torpedo tubes; 2 Mk 11 Hedgehogs; 1 DC rack
Main engines: 4 Fiat diesels; 2 shafts; 24 000 bhp
Speed, knots: 25

First major warships built in Turkey, the start of a most important era in the Eastern Mediterranean. Both are named after famous ships of the Ottoman Navy. Of modified US "Claud Jones" design.

Fire control: Each mounting has GFCS Mk 63.

Radar: Air search: SPS 40.
Surface search: SPS 10.
Fire control: SPG 34 (on guns).

BERK *6/1977, Dr. Giorgio Arra*

LIGHT FORCES

Note: There is a report that a hydrofoil version of the "Nasty" class is under development.

0 + 4 "IMPROVED KARTAL" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 180
Missiles: SSM; 8 Harpoon
Speed, knots: 42

Ordered from Lürssen, Vegesack in 1978-79.

4 LÜRSSEN FPB 57 TYPE (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
DOĞAN	P 340	Lürssen, Vegesack	15 June 1977
MARTI	P 341	Taşkizak Yard, Istanbul	28 July 1978
TAYFUN	P 342	Taşkizak Yard, Istanbul	1980
VOLKAN	P 343	Taşkizak Yard, Istanbul	1981

Displacement, tons: 410
Dimensions, feet (metres): 190·6 × 25 × 8·8 *(58·1 × 7·6 × 2·7)*
Missiles: SSM; 8 Harpoon (2 quad launchers)
Guns: 1—76 mm; 2—35 mm/90 Oerlikon (twin aft)
Main engines: 4—16-cyl MTU diesels; 18 000 hp = 38 knots
Range, miles: 700 at 35 knots

Ordered 3 August 1973. *Doğan* laid down 2 June 1975 (launched 16 June 1976), *Marti* 1 July 1975 (launched 30 June 1977), *Tayfun* 1 December 1975, (launched 19 July 1979). *Volkan* launched 25 July 1980.

Weapon control: Hollandse Signaal WM28.

MARTI *1981, Selçuk Emre*

9 "KARTAL" CLASS (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
DENIZKUSU	P 321 (ex-*P 336*)	Lürssen, Vegesack	1967
ATMACA	P 322 (ex-*P 335*)	Lürssen, Vegesack	1967
SAHIN	P 323 (ex-*P 334*)	Lürssen, Vegesack	1967
KARTAL	P 324 (ex-*P 333*)	Lürssen, Vegesack	1967
MELTEM	P 325 (ex-*P 330*)	Lürssen, Vegesack	1968
PELIKAN	P 326	Lürssen, Vegesack	1968
ALBATROS	P 327 (ex-*P 325*)	Lürssen, Vegesack	1968
ŞIMŞEK	P 328 (ex-*P 332*)	Lürssen, Vegesack	1968
KASIRGA	P 329 (ex-*P 338*)	Lürssen, Vegesack	1967

Displacement, tons: 160 standard; 180 full load
Dimensions, feet (metres): 140·5 × 23·5 × 7·2 *(42·8 × 7·1 × 2·2)*
Missiles: SSM; 4—Penguin 2
Guns: 2—40 mm/70 (single)
Torpedo tubes: 4—21 in *(533 mm)* (see *note*)
Main engines: 4 MTU 16V 538 (Maybach) diesels; 4 shafts; 12 000 bhp = 42 knots
Complement: 39

Of the Federal German Jaguar type. Launch dates—*Atmaca* 6 May 1966, *Kartal* 4 November 1965, *Meltem* 28 December 1966.

MELTEM *1978, Selçuk Emre*

7 Ex-FDR "JAGUAR" CLASS (FAST ATTACK CRAFT—TORPEDO)

Name	*No.*	*Builders*	*Commissioned*
FIRTINA (ex-*FDR Pelikan*, P 6086)	P 330	Lürssen, Vegesack	1962
TUFAN (ex-*FDR Storch*, P 6085)	P 331	Lürssen, Vegesack	1962
KILIÇ (ex-*FDR Löwe*, P 6065)	P 332	Lürssen, Vegesack	1960
MIZRAK (ex-*FDR Hähner*, P 6087)	P 333	Lürssen, Vegesack	1962
YILDIZ (ex-*FDR Tiger*, P 6063)	P 334	Lürssen, Vegesack	1959
KALKAN (ex-*FDR Wolf*, P 6062)	P 335	Lürssen, Vegesack	1959
KARAYEL (ex-*FDR Pinguin*, P 6090)	P 336	Lürssen, Vegesack	1962

Displacement, tons: 160 standard; 190 full load
Dimensions, feet (metres): 139·4 × 23·4 × 7·9 *(42·5 × 7·2 × 2·4)*
Guns: 2—40 mm/70 Bofors (single)
Torpedo tubes: 4—21 in *(533 mm)* (2 tubes can be removed to embark 4 mines)
Main engines: 4 Maybach (MTU) diesels; 4 shafts; 12 000 bhp = 42 knots
Complement: 39

In late 1975-early 1976 seven "Jaguar" class were transferred by Federal Germany to Turkey. In addition three more were transferred for spare parts—*Alk* P 6084, *Fuchs* P 6066 and *Reiher* P 6089.

FIRTINA *1976, Reinhard Nerlich*

1 "GIRNE" CLASS (FAST ATTACK CRAFT—GUN)

Name	*No.*	*Builders*	*Commissioned*
GIRNE	P 140	Taşkizak Naval Yard	1976

Displacement, tons: 341 standard; 399 full load
Dimensions, feet (metres): 190·6 × 24·9 × 9·2 *(58·1 × 7·6 × 2·8)*
Guns: 2—40 mm; (2 singles) 2—20 mm
A/S weapons: 2 Mousetraps Mk 20; 2 DCTs; 2 DC racks
Main engines: 2 MTU diesels; 9 000 hp; 2 shafts = 36 knots
Range, miles: 4 200 at 16 knots
Complement: 30 (3 officers, 27 ratings)

Originally first of a series. Project now cancelled. Has US Mk 51 optical director.

GIRNE *1978, Selçuk Emre*

2 Ex-US "ASHEVILLE" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
YILDIRIM (ex-USS *Defiance*, PG 95)	P 338	Petersons, Wisconsin	24 Sep 1969
BORA (ex-USS *Surprise*, PG 97)	P 339	Petersons, Wisconsin	17 Oct 1969

Displacement, tons: 225 standard; 245 full load
Dimensions, feet (metres): 164·5 × 23·8 × 9·5 *(50·1 × 7·3 × 2·9)*
Guns: 1—3 in *(76m mm)*50 (Mk 34); 1—40 mm/60 (Mk 10); 4—5 MGs
Main engines: CODAG; 2 Cummins diesels; 1 450 hp = 16 knots; 1 GE gas turbine; 13 300 shp = 40 knots
Complement: 25

These vessels belong to the largest Patrol Type built by the US Navy since World War II and the first of that Navy to have gas turbines. Transferred to Turkey on 11 June 1973 and 28 February 1973 respectively.

YILDIRIM *1979, Selçuk Emre*

11 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
AB 25	P 1225	Taşkizak Naval Yard	1967
AB 26	P 1226	Taşkizak Naval Yard	1967
AB 27	P 1227	Taşkizak Naval Yard	1967
AB 28	P 1228	Taşkizak Naval Yard	1968
AB 29	P 1229	Taşkizak Naval Yard	1968
AB 30	P 1230	Taşkizak Naval Yard	1969
AB 31	P 1231	Taşkizak Naval Yard	1969
AB 32	P 1232	Taşkizak Naval Yard	1970
AB 33	P 1233	Taşkizak Naval Yard	1970
AB 34	P 1234	Taşkizak Naval Yard	1970
AB 35	P 1235	Taşkizak Naval Yard	1970

Displacement, tons: 170
Dimensions, feet (metres): 132 × 21 × 5·5 *(40·2 × 6·4 × 1·7)*
Guns: 2—40 mm (in some); 1—40 mm; 1—20 mm (others)
Speed, knots: 22

First was launched on 9 March 1967. Six similar launches are operated by the Gendarmerie.

AB 27 *1979, Selçuk Emre*

4 US "PGM 71" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
AB 21 (ex-*PGM 104*)	P 1221	Peterson, Sturgeon Bay, USA	Dec 1967
AB 22 (ex-*PGM 105*)	P 1222	Peterson, Sturgeon Bay, USA	Dec 1967
AB 23 (ex-*PGM 106*)	P 1223	Peterson, Sturgeon Bay, USA	Dec 1967
AB 24 (ex-*PGM 108*)	P 1224	Peterson, Sturgeon Bay, USA	Apr 1968

Displacement, tons: 130 standard; 147 full load
Dimensions, feet (metres): 101 × 21 × 7 *(30·8 × 6·4 × 2·1)*
Guns: 1—40 mm; 4—20 mm
Main engines: 2 diesels; 2 shafts; 1 850 hp = 18·5 knots
Range, miles: 1 500 at 10 knots
Complement: 15

AB 24 *1979, Selçuk Emre*

6 Ex-US "PC 1638" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
SULTANHISAR (ex-*PC 1638*)	P 111	Gunderson Bros Engineering Co, Portland, Oregon	1964
DEMIRHISAR (ex-*PC 1639*)	P 112	Gunderson Bros Engineering Co, Portland, Oregon	1965
YARHISAR (ex-*PC 1640*)	P 113	Gunderson Bros Engineering Co, Portland, Oregon	1964
AKHISAR (ex-*PC 1641*)	P 114	Gunderson Bros Engineering Co, Portland, Oregon	1964
SIVRIHISAR (ex-*PC 1642*)	P 115	Gunderson Bros Engineering Co, Portland, Oregon	1964
KOÇHISAR (ex-*PC 1643*)	P 116	Gölcük Dockyard, Turkey	1965

Displacement, tons: 280 standard; 412 full load
Dimensions, feet (metres): 173·7 × 23 × 10·2 *(53 × 7 × 3·1)*
Guns: 1—40 mm; 4—20 mm (twins)
A/S weapons: 4 DCTs; 1 Hedgehog (some in place of 40 mm gun)
Main engines: 2 FM diesels; 2 shafts; 2 800 bhp = 19 knots
Range, miles: 6 000 at 10 knots
Complement: 65 (5 officers, and 60 men)

Transferred in May 1964, 22 April 1965, September 1964, 3 December 1964, June 1965 and July 1965 respectively.

SIVRIHISAR *1979, Selçuk Emre*

9 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
—	J 12	Schweers, Bardenfleth	1961
—	J 13	Schweers, Bardenfleth	1961
—	J 14	Schweers, Bardenfleth	1961
—	J 15	Schweers, Bardenfleth	1961
—	J 16	Schweers, Bardenfleth	1962
—	J 17	Schweers, Bardenfleth	1962
—	J 18	Schweers, Bardenfleth	1962
—	J 19	Schweers, Bardenfleth	1962
—	J 20	Schweers, Bardenfleth	1962

Displacement, tons: 80
Dimensions, feet (metres): 94·8 × 15·4 × 4·6 *(28·9 × 4·7 × 1·4)*
Gun: 1—20 mm

Of West German "KW 15" Type.

11 LARGE PATROL CRAFT

Name	No.	Builders	Commissioned
—	J 21	Gölcük Navy Yard	1968
—	J 22	Gölcük Navy Yard	1968
—	J 23	Taşkizak Naval Yard	1969
—	J 24	Taşkizak Naval Yard	1969
—	J 25	Taşkizak Naval Yard	1969
—	J 26	Taşkizak Naval Yard	1969
—	J 27	Taşkizak Naval Yard	1969
—	J 28	Taşkizak Naval Yard	1970
—	J 29	Taşkizak Naval Yard	1971
—	J 30	Taşkizak Naval Yard	1971
—	J 34	Taşkizak Naval Yard	1977

Displacement, tons: 150
Dimensions, feet (metres): 129·3 × 20·6 × 4·9 *(39·4 × 6·3 × 1·5)*
(J 34; 131·2 × 21·3 × 4·9 *(40 × 6·5 × 1·5)*)
Guns: 2—40 mm
Main engines: 4 MTU 12V 493 diesels; 2 shafts; 3 200 bhp = 22 knots

Operated by Gendarmerie.

J 25 *1979, Selçuk Emre*

6 + 8 "SAR 33" TYPE (LARGE PATROL CRAFT)

J 61 **J 62** **J 63** **J 64** **J 65** **J 66**

Displacement, tons: 170 full load
Dimensions, feet (metres): 108·3 × 28·3 × 9·7 *(33 × 8·6 × 3)*
Guns: 1—40 mm; 2 MGs
Main engines: 3 SCAM diesels; 12 000 hp = 40 knots
Range, miles: 450 at 35 knots; 1 000 at economical speed
Complement: 23

Prototype ordered from Abeking and Rasmussen, Lemwerder in May 1976. J 61 laid down October 1976, launched 12 December 1977, the remaining 13 being built at Taşkizak Naval Yard, Istanbul. J 62 launched 19 July 1979 and J 64 launched 25 July 1980. Ordered for Gendarmerie.

Armament: Could carry SSM, 76 mm and 35 mm (twin) but guns listed fitted for Gendarmerie.

J 61 *1978, Selçuk Emre*

4 Ex-US COAST GUARD TYPE (COASTAL PATROL CRAFT)

LS 9 P 1209 (ex-US *A 001*)
LS 10 P 1210 (ex-US *B 001*)
LS 11 P 1211 (ex-US *C 001*)
LS 12 P 1212 (ex-US *D 001*)

Displacement, tons: 63 standard
Dimensions, feet (metres): 83 × 14 × 5 *(25·3 × 4·3 × 1·6)*
Gun: 1—20 mm
A/S weapons: 2 Mousetrap
Main engines: 2 Cummins diesels; 1 100 bhp = 20 knots

Transferred on 25 June 1953. All built by US Coast Guard Yard, Curtis Bay, Maryland.

LS 12 *1/1980, Selçuk Emre*

MINE WARFARE FORCES

(see *Bayraktar, Sancaktar* and *Çakabey* under Amphibious Forces)

1 MINELAYER

Name	*No.*	*Builders*	*Commissioned*
NUSRET	N 110 (ex-*N 108*)	Frederikshaven Dockyard, Denmark	16 Sep 1964

Displacement, tons: 1 880 standard
Dimensions, feet (metres): 252·7 × 41 × 11 *(77 × 12·6 × 3·4)*
Guns: 4—3 in *(76 mm)* (2 twin)
Mines: 400
Main engines: General Motors diesels; 4 800 hp; 2 shafts
Speed, knots: 18
Complement: 146

Laid down in 1962, launched in 1964. Similar to Danish "Falster" class.

Radar: Search: RAN 7S.
Fire control: I Band.
Navigation radar.

NUSRET *1975, Turkish Navy*

5 Ex-US "MODIFIED LSM 1" CLASS (COASTAL MINELAYERS)

Name	*No.*	*Builders*	*Commissioned*
MORDOĞAN (ex-US *LSM 484* ex-*MMC 11*)	N 101	Brown S.B. Co, Texas	15 Apr 1945
MERİÇ (ex-US *LSM 490*, ex-*MMC 12*)	N 102	Brown S.B. Co, Texas	28 Apr 1945
MARMARIS (ex-US *LSM 481*, ex-*MMC 10*)	N 103	Brown S.B. Co, Texas	8 Apr 1945
MERSIN (ex-US *LSM 494*, ex-*MMC 13*)	N 104	Brown S.B. Co, Texas	8 May 1945
MÜREFTE (ex-US *LSM 492*, ex-*MMC 14*)	N 105	Brown S.B. Co, Texas	1 May 1945

Displacement, tons: 743 standard; 1 100 full load
Dimensions, feet (metres): 203·2 × 34·5 × 8·5 *(61·9 × 10·5 × 2·6)*
Guns: 4—40 mm (twins); 2—20 mm
Main engines: Diesels; 2 shafts; 2 880 bhp = 12 knots
Oil fuel, tons: 60
Range, miles: 2 500 at 12 knots
Complement: 89

Ex-US Landing Ships Medium. All launched in 1945, converted into coastal minelayers by the US Navy in 1952 and taken over by the Turkish Navy (LSM 481, 484 and 490) and the Norwegian Navy (LSM 492 and 494) in October 1952 under MAP. LSM 492 *(Vale)* and LSM 494 *(Vidar)* were retransferred to the Turkish Navy on 1 November 1960 at Bergen, Norway.

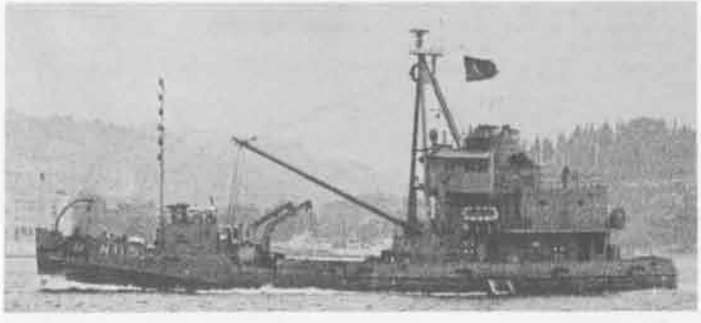
MARMARIS *11/1979, Selçuk Emre*

1 Ex-US YMP TYPE (COASTAL MINELAYER)

Name	*No.*	*Builders*	*Commissioned*
MEHMETCIK (ex-US *YMP 3*)	N 115	Higgins Inc, New Orleans	1958

Displacement, tons: 540 full load
Dimensions, feet (metres): 130 × 35 × 6 *(39·6 × 10·7 × 1·9)*
Main engines: Diesels; 2 shafts; 600 bhp = 10 knots
Complement: 22

Former US motor mine planter. Steel hulled. Transferred under MAP in 1958. For harbour defence.



MEHMETCIK *1979, Selçuk Emre*

12 Ex-US "ADJUTANT", "MSC 268" and "MSC 294" CLASSES (MINESWEEPERS—COASTAL)

SEYMEN (ex-*MSC 131*) M 507
SELÇUK (ex-*MSC 124*) M 508
SEYHAN (ex-*MSC 142*) M 509
SAMSUN (ex-USS *MSC 268*) M 510
SINOP (ex-USS *MSC 270*) M 511
SURMENE (ex-USS *MSC 271*) M 512
SEDDULBAHIR (ex-*MSC 272*) M 513
SILIFKE (ex-USS *MSC 304*) M 514
SAROS (ex-USS *MSC 305*) M 515
SIGACIK (ex-USS *MSC 311*) M 516
SAPANCA (ex-USS *MSC 312*) M 517
SARIYER (ex-USS *MSC 315*) M 518

Displacement, tons: 320 standard; 370 full load
Dimensions, feet (metres): 141 × 26 × 8·3 *(43 × 8 × 2·6)*
Guns: 2—20 mm
Main engines: 2 diesels; 2 shafts; 1 200 bhp = 14 knots
Oil fuel, tons: 25
Range, miles: 2 500 at 10 knots
Complement: 38 (4 officers, 34 men)

Transferred on 19 November 1970, 24 March 1970, 24 March 1970, 30 September 1958, February 1959, 27 March 1959, May 1959, September 1965, February 1966, June 1965, 26 July 1965, 8 September 1967, respectively. *Selçuk* and *Seyhan* were transferred from France (via the USA) and *Seymen* from Belgium (via the USA).

Builders: M 507 Hiltebrant D.D. Co, New York; M 508 Stephen Bros, California; M 509 South Coast Co, Newport Beach, California; M 510-513 Bellingham S.Y., Washington; M 514-5 Dorchester S.B., New Jersey; M 516-518 Peterson Bldrs, Wisconsin.

SURMENE *1975, Turkish Navy*

4 Ex-CANADIAN MCB TYPE (MINESWEEPERS—COASTAL)

TRABZON (ex-HMCS *Gaspe*) M 530
TERME (ex-HMCS *Trinity*) M 531
TIREBOLU (ex-HMCS *Comax*) M 532
TEKIRDAG (ex-HMCS *Ungava*) M 533

Displacement, tons: 390 standard; 412 full load
Dimensions, feet (metres): 152 × 28 × 7 *(46·3 × 8·5 × 2·1)*
Guns: 1—40 mm; 2 MGs (singles)
Main engines: Diesels; 2 shafts; 2 400 bhp = 16 knots
Oil fuel, tons: 52
Range, miles: 4 500 at 11 knots
Complement: 44

Sailed from Sydney, Nova Scotia, to Turkey on 19 May 1958. Built by Davie S.B. Co. 1951-53. Of similar type to British "Ton" class.

TIREBOLU *1978, Selçuk Emre*

6 Ex-FDR "VEGESACK" CLASS (MINESWEEPERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
KARAMÜRSEL (ex-*Worms* M 1253)	M 520	Amiot, Cherbourg	1960
KEREMPE (ex-*Detmold* M 1252)	M 521	Amiot, Cherbourg	1960
KILIMLI (ex-*Siegen* M 1254)	M 522	Amiot, Cherbourg	1960
KOZLU (ex-*Hameln* M 1251)	M 523	Amiot, Cherbourg	1960
KUŞADASI (ex-*Vegesack* M 1250)	M 524	Amiot, Cherbourg	1960
KEMER (ex-*Passau* M 1255)	M 525	Amiot, Cherbourg	1960

Displacement, tons: 362 standard; 378 full load
Dimensions, feet (metres): 155·1 × 28·2 × 9·5 *(47·3 × 8·6 × 2·9)*
Guns: 2—20 mm
Main engines: 2 Mercedes-Benz (MTU) diesels; 2 shafts; 1 500 bhp = 15 knots (cp propellers)

Of similar class to French *Mercure*. M 520-524 transferred by FDR to Turkey late 1975-early 1976. *Kemer* transferred 1979 and refitted 1980 at Taşkizak.

KILIMLI *1979, Selçuk Emre*

4 Ex-US "CAPE" CLASS (MINESWEEPERS—INSHORE)

Name	*No.*	*Commissioned*
FOÇA (ex-*MSI 15*)	M 500	Aug 1967
FETHIYE (ex-*MSI 16*)	M 501	Aug 1967
FATSA (ex-*MSI 17*)	M 502	Sep 1967
FINIKE (ex-*MSI 18*)	M 503	8 Nov 1967

Displacement, tons: 180 standard; 235 full load
Dimensions, feet (metres): 111·9 × 23·5 × 7·9 *(34 × 7·1 × 2·4)*
Gun: 1—5 MG
Main engines: 4 diesels; 2 shafts; 960 bhp = 13 knots
Complement: 30

Built in USA and transferred under MAP at Boston, Massachusetts, August-December 1967. All built by Peterson Builders Inc, Wisconsin.

FOÇA *1979, Selçuk Emre*

9 MINEHUNTING BOATS

MTB 1 P 311
MTB 2 P 312
MTB 3 P 313
MTB 4 P 314
MTB 6 P 316
MTB 7 P 317
MTB 8 P 318
MTB 9 P 319
MTB 10 P 320

Displacement, tons: 70 standard
Dimensions, feet (metres): 71·5 × 13·8 × 8·5 *(21·8 × 4·2 × 2·6)*
Guns: Some carry 1—20 mm or 1—MG aft
Main engines: Diesels; 2 000 bhp = 20 knots

All launched in 1942. Now employed as minehunting base ships.

MTB 2 *9/1980, F. Özgünsür*

AMPHIBIOUS FORCES

Note: The prefix "Ç" for smaller amphibious vessels stands for "Çikarma Gemi" (landing vessel) and indicates that the craft are earmarked for national rather than NATO control.

2 Ex-US "TERREBONNE PARISH" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
ERTUĞRUL (ex-USS *Windham County*, LST 1170)	L 401	Christy Corporation	1954
SERDAR (ex-USS *Westchester County*, LST 1167)	L 402	Christy Corporation	1954

Displacement, tons: 2 590 light; 5 800 full load
Dimensions, feet (metres): 384 × 55 × 17 *(117·1 × 16·8 × 5·2)*
Guns: 6—3 in/50 (twins)
Main engines: 4 General Motors diesels; 2 shafts (cp propellers); 6 000 bhp = 15 knots
Complement: 116
Troops: 395

Transferred by USA June 1973 (L 401) and 27 August 1974 (L 402).

SERDAR *1979, Selçuk Emre*

2 Ex-US "512-1152" CLASS (LSTs)

Name	*No.*
BAYRAKTAR (ex-FDR *Bottrop*, ex-USS *Saline County* LST 1101)	NL 120 (ex-N-111, ex-A 579, ex-L 403)
SANCAKTAR (ex-FDR *Bochum*, ex-USS *Rice County* LST 1089)	NL 123 (ex-N-112, ex-A 580, ex-L 404)

Displacement, tons: 1 653 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 6—40 mm (2 twin, 2 single)
Main engines: 2 General Motors diesels; 2 shafts; 1 700 bhp = 11 knots
Range, miles: 15 000 at 9 knots
Complement: 125

Transferred to West Germany in 1961 and thence to Turkey on 13 December 1972. Converted into minelayers in West Germany 1962-64. Minelaying gear removed 1974-75 and replaced in 1979. Now dual purpose ships.

BAYRAKTAR (old pennant number) *1973, Reinhard Nerlich*

1 + ? TURKISH "ÇAKABEY" CLASS (LSTs)

Name	*No.*	*Builders*	*Commissioned*
ÇAKABEY	NL 112 (ex-L 405)	Taşkizak Naval Yard	25 July 1980

Displacement, tons: 1 600
Dimensions, feet (metres): 253·5 × 39·4 × 7·5 *(77·3 × 12 × 2·3)*
Guns: 4—40 mm; 4—20 mm (twins)
Main engines: 3 diesels; 4 320 hp = 14 knots

Of conventional design. *Çakabey* launched 30 June 1977. Helicopter platform amidships. Capacity, nine tanks, ten jeeps, two LCVPs, 400 troops or 150 mines. Continuing programme.

ÇAKABEY *1981, Selçuk Emre*

5 Ex-BRITISH LCT 4s

Ç 101 and 103-106

Displacement, tons: 500 light; 700 full load
Dimensions, feet (metres): 187·3 × 38·8 × 5·4 *(57·1 × 11·8 × 1·6)*
Guns: 2—20 mm
Main engines: 2 Davey Paxman diesels; 920 bhp = 9 knots
Complement: 15

Built in the UK in 1942. Transferred 25 September 1967.

Ç 104 *1975, Turkish Navy*

11 TURKISH-BUILT LCTs

Ç 107-118

Displacement, tons: 400 light; 580 full load
Dimensions, feet (metres): 186·9 × 39·4 × 4·6 *(57 × 12 × 1·4)*
Guns: 2—20 mm
Speed, knots: 10·5
Complement: 15

Built in Turkey 1966-73. Of French EDIC type.

18 TURKISH-BUILT LCTs

Ç 119-129, 132-138

Displacement, tons: 600
Dimensions, feet (metres): 183·7 × 37·8 × 4·1 *(56 × 11·5 × 1·3)*
Guns: 2—20 mm
Main engines: Diesels; 900 hp = 8·5 knots

Continuing programme. Ç 130 and Ç 131 transferred to Libya January 1980. Ç 136-7-8 launched 21 March 1980. Several more on order for Libya from Taşkizak.

Ç 137 *3/1980, Selçuk Emre*

12 TURKISH-BUILT LCUs

Ç 205-216

Displacement, tons: 320 light; 405 full load
Dimensions, feet (metres): 142 × 28 × 5·7 *(43·3 × 8·5 × 1·7)*
Guns: 2—20 mm
Main engines: General Motors diesels; 2 shafts; 600 bhp = 10 knots

Built in Turkey 1965-66. Of US LCU type.

Ç 207 *1975, Turkish Navy*

4 Ex-US LCU 501 SERIES

Ç 201-204 (ex-US *LCU 588, 608, 666* and *667)*

Displacement, tons: 160 light; 320 full load
Dimensions, feet (metres): 119 × 32·7 × 5 *(36·3 × 10 × 1·5)*
Guns: 2—20 mm
Main engines: 3 diesels; 675 bhp = 10 knots
Complement: 13

Transferred from the USA July 1967.

Ç 204 *1975, Turkish Navy*

20 TURKISH-BUILT LCM 8 TYPE

Ç 301-320

Displacement, tons: 58 light; 113 full load
Dimensions, feet (metres): 72 × 20·5 × 4·8 *(22 × 6·3 × 1·4)*
Gun: 1—12·7 mm
Main engines: General Motors diesels; 2 shafts; 660 bhp = 9·5 knots
Complement: 9

Built in Turkey in 1965.

Ç 305 *1/1980, Selçuk Emre*

SURVEY SHIPS

2 US "AUK " CLASS

Name	*No.*	*Builder*	*Commissioned*
ÇANDARLI (ex-HMS *Frolic*)	A 593 (ex-AGS-2)	General Engineering and D.D. Co, Alameda USA	1943
ÇARŞAMBA (ex-HMS *Tattoo*)	A 594 (ex-AGS-1)	Associated S.B. Cleveland	1943

Displacement, tons: 1 125 full load
Dimensions, feet (metres): 221 × 32 × 10·8 *(67·4 × 9·8 × 3·3)*
Guns: 1—3 in *(76 mm)*; 2—40 mm
Main engines: Diesel-electric; 2 shafts; 3 500 bhp
Speed, knots: 18
Complement: 98 (8 officers, 90 ratings)

The survivors of a class of seven transferred from the Royal Navy in 1947, having been transferred by the USA during construction.

ÇARŞAMBA *1978, Selçuk Emre*

MESAHA 1 Y 1221 **MESAHA 2** Y 1222 **MESAHA 4** Y 1224

Mesaha 1 and *2* of 45 tons with a complement of eight—built in 1966. *Mesaha 4* is an ex-British HDML of 60 tons built in 1943, one of the survivors (ex-LS 8) of the group LS 1-8 transferred by the UK about 1945.

MESAHA I *1/1980, Selçuk Emre*

SERVICE FORCES

Notes: (a) *Akar* A 570, an ex-tanker is used as alongside depot ship at Gölçük.
(b) *Toros* Y 1100, *Atak* Y 1101 and two HDMLs *LS 5* Y 1108 and *LS 6* Y 1109 are used for midshipmen's training. For further details of LS group see *Mesaha 4* under Survey Ships.

1 Ex-FDR DEPOT SHIP (TRAINING SHIP)

Name	*No.*	*Builders*	*Commissioned*
CEZAYIRLI GAZI HASAN PAŞA (ex-FDR *Ruhr*)	A 579	Schiekerwerft, Hamburg	2 May 1964

Displacement, tons: 2 370 standard; 2 540 full load
Dimensions, feet (metres): 323·5 × 38·8 × 11·2 *(99 × 11·8 × 3·4)*
Guns: 2—3·9 in *(100 mm)*/55 (single); 3—40 mm (singles)
Main engines: 6 diesels; 11 400 bhp; 2 shafts
Speed, knots: 20·5
Range, miles: 1 625 at 15 knots
Complement: 110 (accommodation for 200)

Used as a training ship. Commissioned in Turkish Navy 16 January 1977.

Radar: Search: HSA DA 02.
Fire control: Two HSA M 45.

Transfer: 18 July 1975 followed by major refit.

CEZAYIRLI GAZI HASAN PAŞA *1979, Marius Bar*

1 TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
SAVARONA	—	Blohm & Voss, Hamburg	1932

Displacement, tons: 5 100
Dimensions, feet (metres): 349·5 wl; 408·5 oa × 53 × 20·5 *(106·5; 124·5 × 16·2 × 6·2)*
Guns: 4—3 in *(76 mm)*; 2—40 mm; 2—20 mm
Main engines: 6 geared turbines; 2 shafts; 10 750 shp
Boilers: 4 water tube (400 psi)
Speed, knots: 18
Oil fuel, tons: 2 100
Range, miles: 9 000 at 15 knots
Complement: 132 + 81 midshipmen

Launched on 28 February 1931. Formerly probably the most sumptuously fitted yacht afloat. Equipment includes Sperry gyro-stabilisers. Converted into a training ship in 1952, the saloons and dining rooms being adapted as classrooms, workshops and libraries for midshipmen.

SAVARONA

1 SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
YUZBAŞI TOLUNAY	A 571	Taşkizak, Naval D.Y., Istanbul	1951

Displacement, tons: 2 500 standard; 3 500 full load
Dimensions, feet (metres): 260 × 41 × 19·5 *(79 × 12·4 × 5·9)*
Guns: 2—40 mm
Main engines: Atlas-Polar diesels; 2 shafts; 1 920 bhp = 14 knots

Launched on 22 August 1950.

YUZBAŞI TOLUNAY *1975, Turkish Navy*

1 SUPPORT TANKER

ALBAY HAKKI BURAK A 572

Displacement, tons: 3 800 full load
Dimensions, feet (metres): 274·7 × 40·2 × 18 *(83·7 × 12·3 × 5·5)*
Guns: 2—40 mm
Main engines: 2 General Motors diesels; electric drive; 4 400 bhp = 16 knots
Complement: 88

Built in 1964.

ALBAY HAKKI BURAK *1975, Turkish Navy*

1 SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
BINBAŞI SAADETTIN GÜRÇAN	A 573	Taşkizak Naval D.Y., Istanbul	1970

Displacement, tons: 1 505 standard; 4 460 full load
Dimensions, feet (metres): 294·2 × 38·7 × 17·7 *(89·7 × 11·8 × 5·4)*
Guns: 1—3 in *(76 mm)*; 2—20 mm
Main engines: Diesels; 4 400 bhp

Launched 1 July 1969.

BINBAŞI SAADETTIN GÜRÇAN *1979, Selçuk Emre*

1 Ex-US SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
AKPINAR (ex-USS *Chiwankum*, AOG 26)	A 574	East Coast S.Y. Inc, Bayonne	22 July 1944

Displacement, tons: 700 light; 2 700 full load
Measurement, feet (metres): 1 453 deadweight
Dimensions, feet (metres): 220·5 × 37 × 12·8 *(67·3 × 11·3 × 3·9)*
Guns: 1—76 mm; 2—40 mm; 2—20 mm
Main engine: Diesel; 800 bhp = 10 knots

Laid down on 2 April 1944. Launched on 5 May 1944. Transferred to Turkey in May 1948.

AKPINAR *1975, Turkish Navy*

1 Ex-FDR SUPPORT TANKER

Name	*No.*	*Builders*	*Commissioned*
INEBOLU (ex-*Bodensee*, A 1406, ex-*Unkas*)	A 575	Lindenau, Kiel	26 Mar 1959

Measurement, tons: 985 gross; 1 238 deadweight
Dimensions, feet (metres): 219·8 × 32·1 × 14·1 *(67 × 9·8 × 4·3)*
Main engines: Diesels; 1 050 bhp = 12 knots
Complement: 26

Launched 19 November 1955. Of "Bodensee" class. Transferred September 1977 at Wilhelmshavn, under West German military aid programme. Has replenishment capability.

"BODENSEE" Class *5/1975, Reinhard Nerlich*

1 HARBOUR TANKER

Name	*No.*	*Builders*	*Commissioned*
GÖLÇÜK (ex-*A 573*)	Y 1207	Gölcük Dockyard	1936

Displacement, tons: 1 255
Measurement, tons: 750 deadweight
Dimensions, feet (metres): 185 × 31·1 × 10 *(56·4 × 9·5 × 3·1)*
Main engine: Burmeister & Wain diesel; 700 bhp = 12·5 knots

Launched on 4 November 1935 at Gölçük Dockyard.

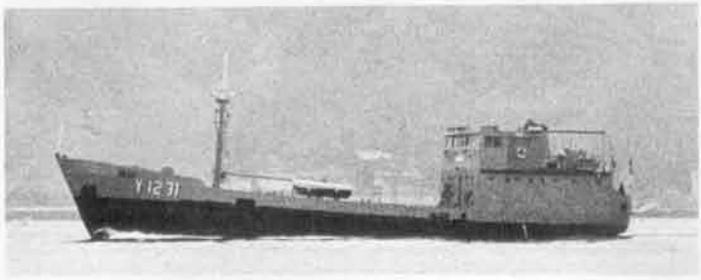
GÖLÇÜK *1979, Selçuk Emre*

3 HARBOUR TANKERS

H 500, H 501, H 502 Y 1231-Y 1233

Displacement, tons: 300
Dimensions, feet (metres): 110·2 × 27·9 × 5·9 *(33·6 × 8·5 × 1·8)*
Main engine: 1 diesel; 225 hp = 11 knots

Sisters of water tankers of "Pinar" series. Built at Taşkizak.



H 500 *3/1980, Selçuk Emre*

1 Ex-US "AEGIR" CLASS (SUBMARINE TENDER)

DONATAN (ex-USS *Anthedon*, AS 24) A 583

Displacement, tons: 8 100 standard
Dimensions, feet (metres): 492 × 69·5 × 26·5 *(150 × 21·8 × 8·1)*
Guns: 4—76 mm; 8—40 mm (2 twins, 4 singles); 4—20 mm
Main engines: Geared turbines; 1 shaft; 8 500 shp = 14·4 knots
Boilers: 2

Transferred to Turkey on 7 February 1969.

DONATAN *1972, Turkish Navy*

2 Ex-US REPAIR SHIPS

Name	*No.*	*Builders*	*Commissioned*
ONARAN (ex-*Alecto*, AGP 14, ex-*LST 558*)	A 581	Missouri Valley Bridge & Iron Co	1945
BAŞARAN (ex-*Patroclus*, ARL 19, ex-*LST 955*)	A 582	Bethlehem Hingham Shipyard	1945

Displacement, tons: 1 625 standard; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·4)*
Guns: 8—40 mm (quads); 8—20 mm
Main engines: 2 diesels; 2 shafts; 1 700 bhp = 11 knots
Oil fuel, tons: 1 000
Range, miles: 9 000 at 9 knots
Complement: 80

Former US repair ship and MTB tender, respectively, of the LST type. *Başaran* was launched on 22 October 1944, *Onaran* on 14 April 1944. Acquired from the USA in November 1952 and May 1948, respectively.

BAŞARAN *1979, Selçuk Emre*

1 HQ SHIP (LOGISTICS)

ERKIN (ex-*Trabzon*, ex-*Imperial*) A 599

Dimensions, feet (metres): 441 × 58·5 × 23 *(133 × 17·5 × 7)*
Guns: 2—40 mm
Speed, knots: 16
Complement: 128

Built in 1938. Purchased in 1968 and placed on the Navy list in 1970.

ERKIN *1978, Selçuk Emre*

1 Ex-US "DIVER" CLASS (SALVAGE SHIP)

Name	*No.*	*Builders*	*Commissioned*
IŞIN (ex-USS *Safeguard*, ARS 25)	A 589	Basalt Rock Co, Napa California	31 Oct 1944

Displacement, tons: 1 530 standard; 1 970 full load
Dimensions, feet (metres): 213·5 × 41 × 13 *(65·1 × 12·5 × 4)*
Guns: 2—20 mm
Main engines: Diesel electric; 2 shafts; 2 440 shp = 14·3 knots
Complement: 110

Purchased 28 September 1979.

1 Ex-US "CHANTICLEER" CLASS (SUBMARINE RESCUE SHIP)

Name	*No.*	*Builders*	*Commissioned*
AKIN (ex-USS *Greenlet*, ASR 10)	A 585	Moore S.B. & D.D. Co.	29 May 1943

Displacement, tons: 1 653 standard; 2 321 full load
Dimensions, feet (metres): 251·5 × 44 × 16 *(76·7 × 13·4 × 4·9)*
Guns: 1—40 mm; 2—20 mm (twin)
Main engine: Diesel-electric; 1 shaft; 3 000 bhp = 15 knots
Complement: 85

Akin transferred 12 June 1970 and purchased 15 February 1973.

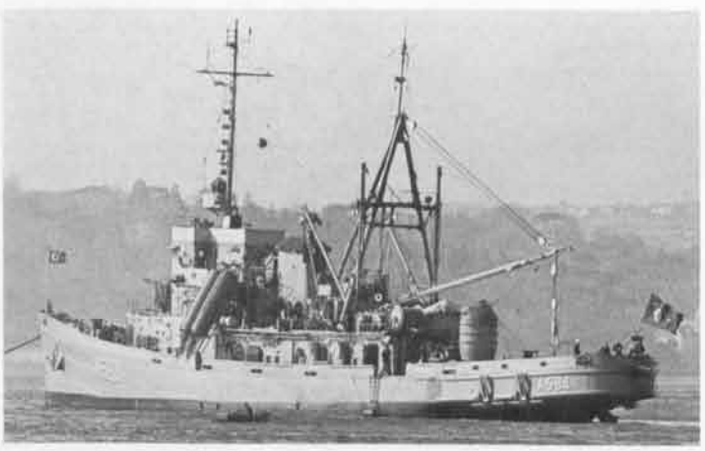
AKIN *1978, Selçuk Emre*

1 SUBMARINE RESCUE SHIP

KURTARAN (ex-USS *Bluebird*, ASR 19, ex-*Yurak* AT 165) A 584

Displacement, tons: 1 294 standard; 1 675 full load
Dimensions, feet (metres): 205 × 38·5 × 11 *(62·5 × 12·2 × 3·5)*
Gun: 1—3 in *(76 mm)*
Main engines: Diesel-electric; 3 000 bhp = 16 knots

Former salvage tug adapted as a submarine rescue vessel in 1947. Transferred from the US Navy on 15 August 1950.



KURTARAN *1979, Selçuk Emre*

2 Ex-FDR "ANGELN" CLASS (DEPOT SHIPS)

Name	*No.*	*Builders*	*Commissioned*
ÜLKÜ (ex-*FDR Angeln*)	A 586	A. C. de Bretagne	1955
UMUR BEY (ex-*FDR Dithmarschen*)	A 588	A. C. de Bretagne	1956

Displacement, tons: 2 600 full load
Dimensions, feet (metres): 296·9 × 43·6 × 20·3 *(90·5 × 13·3 × 6·2)*
Guns: 2—20 mm
Main engine: Pielstick diesel; 1 shaft; 3 000 bhp = 17 knots
Complement: 57

Ex-cargo ships bought by West Germany in 1959. Transferred 22 March 1972 and December 1975.
Umur Bey employed as submarine depot ship and *Ülkü* as light forces depot ship.

UMUR BEY *1978, Selçuk Emre*

3 AMMUNITION TRANSPORTS

CEPHAN 1 and **2** Y 1194, Y 1195
BEKİRDERE Y 1196

4 TRANSPORTS

LAPSEKI Y 1163 **ERDEK** Y 1164 **KILYA** Y 1166 **TUZLA** Y 1168

Measurement, tons: 700
Dimensions, feet (metres): 183·7 × 37·2 × 8·9 *(56 × 12·2 × 2·7)*
Guns: 2—20 mm
Main engines: Steam; 700 hp = 9·5 knots

Have a minelaying capability. Survivors of a class of 11 car-ferries built in UK 1940-42. *Tuzla* has an extra deck level on the superstructure and a taller funnel.

LAPSEKI *1979, Selçuk Emre*

3 SMALL TRANSPORTS

KANARYA Y 1155 **SARKÖY** Y 1156 **ECEABAD** Y 1165

Gun: 1—20 mm

Funnel-aft coaster type.

KANARYA *1/1980, Selçuk Emre*

2 BARRACK SHIPS

NAŞIT ÖNGEREN (ex-US *APL 47*) Y 1204
BINBAŞI METIN SÜLÜS (ex-US *APL 53*) Y 1205

Ex-US transports transferred: Y 1204 on October 1972 and Y 1205 on 6 December 1974. Y 1205 based at Gölçük.

2 FERRIES

IŞÇI TAŞITI 1 and **2** Y 1096, Y 1097

Based at Gölçük for dockyard personnel.

1 TRANSPORT

GONCA Y 1099

1 TRANSPORT

POYRAZ Y 1235

13 SMALL TRANSPORTS

SALOPA 1-13 Y1031-Y1043

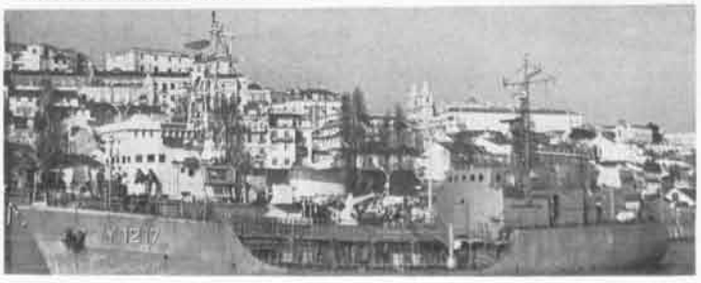
Of varying size and appearance.

1 WATER TANKER

SÖGÜT (ex-FDR *FW 2*) Y 1217

Measurement, tons: 350 deadweight
Dimensions, feet (metres): 144·4 × 25·6 × 8·2 *(44·1 × 7·8 × 2·5)*
Main engines: MWM diesels; 460 bhp = 9·5 knots

Transferred by West Germany 18 July 1975.



SÖGÜT *9/1976, Michael D. J. Lennon*

2 WATER TANKERS

Name	*No.*	*Builders*	*Commissioned*
VAN	Y 1208	Gölçük Dockyard	1970
ULUBAT	Y 1209	Gölçük Dockyard	1969

Displacement, tons: 1 200
Gun: 1—20 mm
Main engines: Designed for a speed of 14·5 knots

Two small tankers for the Turkish Navy built in 1968-70.

6 WATER TANKERS

PINAR 1-6 Y 1211-Y 1216

Displacement, tons: 300
Dimensions, feet (metres): 110·2 × 27·9 × 5·9 *(33·6 × 8·5 × 1·8)*
Main engine: 1 General Motors diesel; 225 hp = 11 knots

Built by Taşkizak naval yard. Cargo 150 tons. Sisters of "H 500" class harbour tankers.

BOOM DEFENCE VESSELS

Name	*No.*	*Builders*	*Commissioned*
AG 6 (ex-USS *AN 93*, ex-Netherlands *Cerberus*, A 895)	P 306	Bethlehem Steel Corporation, Staten Island	10 Nov 1952

Displacement, tons: 780 standard; 855 full load
Dimensions, feet (metres): 165 × 33 × 10 *(50·3 × 10·1 × 3)*
Guns: 1—3 in; 4—20 mm
Main engines: Diesel-electric; 1 shaft; 1 500 bhp = 12·8 knots

Netlayer. Launched in May 1952. Transferred from USA to Netherlands in December 1952. Used first as a boom defence vessel and latterly as salvage and diving tender since 1961 but retained her netlaying capacity. Handed back to US Navy on 17 September 1970 but immediately turned over to the Turkish Navy.

AG 6 *1975, Turkish Navy*

Name	*No.*	*Builders*	*Commissioned*
AG 5 (ex-*AN 104*)	P 305	Kröger, Rendsburg	5 Feb 1961

Displacement, tons: 680 standard; 960 full load
Dimensions, feet (metres): 173·8 × 35 × 13·5 *(53 × 10·7 × 4·1)*
Guns: 1—40 mm; 3—20 mm
Main engines: 4 MAN diesels; 2 shafts; 1 450 bhp = 12 knots

Netlayer *AN 104* built in US off-shore programme for Turkey. Launched on 20 October 1960.

AG 5 *1/1979, Selçuk Emre*

Name	*No.*	*Builders*	*Commissioned*
AG 4 (ex-USS *Larch*, ex-*AN 21*)	P 304	American S.B. Co, Cleveland	1941

Displacement, tons: 560 standard; 805 full load
Dimensions, feet (metres): 163 × 30·5 × 10·5 *(49·7 × 9·3 × 3·2)*
Guns: 4—20 mm
Main engines: Diesel-electric; 800 bhp = 12 knots

Former US netlayer of the "Aloe" class. Laid down in 1940. Launched on 2 July 1941. Acquired in May 1946.

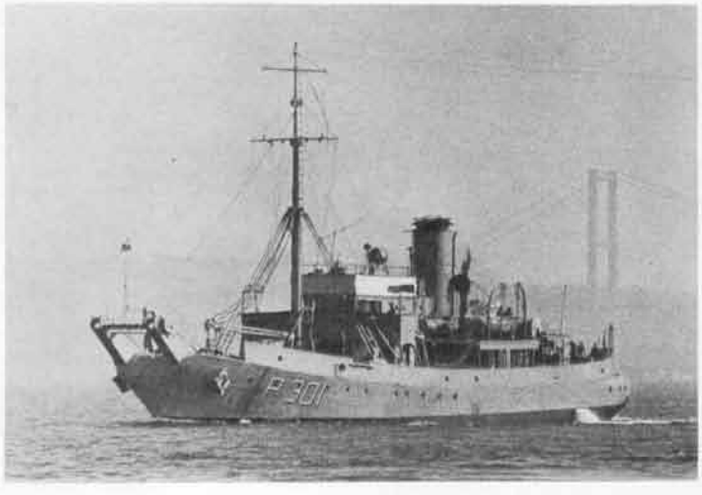
AG 4 *1969*

1 "BAR" CLASS

Name	*No.*	*Builders*	*Commissioned*
AG 1 (ex-HMS *Barbarian*)	P 301	Blyth S.B. Co	1938

Displacement, tons: 750 standard; 1 000 full load
Dimensions, feet (metres): 173·8 × 32·2 × 9·5 *(52·9 × 9·8 × 2·9)*
Guns: 4—20 mm
Main engines: Triple expansion; 850 ihp = 11·5 knots
Boilers: 2 SE

Former British boom defence vessel.



AG 1 *6/1980, Selçuk Emre*

3 GATE VESSELS

KAPI GEMISI 1, 2, 3 Y 1201, 1202, 1203

Displacement, tons: 360
Dimensions, feet (metres): 101 × 33·5 × 4·3 *(30·8 × 10·2 × 1·3)*

These gate vessels were built by Weaver S.Y., USA for Turkey under MAP. Transferred March 1961.

TUGS

1 Ex-US OCEAN TUG

GAZAL (ex-USS *Sioux* ATF 75) A 587

Displacement, tons: 1 235 standard; 1 675 full load
Dimensions, feet (metres): 199·1 × 38 × 15·4 *(60·7 × 11·6 × 4·7)*
Gun: 1—3 in
Main engines: Diesel-electric; 3 000 bhp = 16 knots
Complement: 85

Transferred 30 October 1972. Purchased 15 August 1973. Can be used for salvage.

3 Ex-US ARMY TYPE

KEPEZ Y 1118 **AKBAŞ** Y 1119 **ODEV** Y 1228

Displacement, tons: 971
Dimensions, feet (metres): 146·6 × 33·5 × 14·1 *(44·7 × 10·2 × 4·3)*
Guns: 2—20 mm
Speed, knots: 12

Odev based at Mersin, other two at Gölçük.

2 HARBOUR TUGS

SONDUREN Y 1117 **KUDRET** Y 1229

Displacement, tons: 128
Dimensions, feet (metres): 69·9 × 21 × 9·5 *(21·3 × 6·4 × 2·9)*

Based at Beykoz.

1 Ex-US YTL TYPE (HARBOUR TUG)

YEDEKCI (ex-US *YTL 155*) Y 1121

Based at Gölçük. Of 120 tons and 12 knots. Transferred November 1954.

1 Ex-US HARBOUR TUG

KUVVET (ex-US *YTM*) Y 1122

Displacement, tons: 390
Dimensions, feet (metres): 107 × 26·5 × 12 *(32·6 × 8·1 × 3·7)*

Based at Mersin. Transferred February 1962.

2 HARBOUR TUGS

ÖNCÜ Y 1123 **ONDER** Y 1124

Displacement, tons: 500
Speed, knots: 12

Transferred by USA under MAP. *Onder* based at Ereğli supporting submarines operating in the Black Sea.

3 HARBOUR TUGS

GÜVEN Y 1130 **ATIL** Y 1132 **DOĞANARSLAN** Y 1133

Of 300 tons. Built at Bancusi in 1976.

1 HARBOUR TUG

ERSEV BAYRAK Y 1134

Of 30 tons and 175 hp. Ex-US Army 320 design.

FLOATING DOCKS

Y 1081
16 000 tons lift.

Y 1082
12 000 tons lift.

Y 1083 (ex-US *AFDL*)
2 500 tons lift.

Y 1084
4 500 tons lift.

Y 1085
400 tons lift.

Y 1086
3 000 tons lift.

Y 1087 (ex-US *ARD 12*)
3 500 tons lift.

Transferred November 1971.

AUXILIARIES

2 DIVING CRAFT

SAMANDIRA L 1 and **L 2** Y 1148, Y 1149

1 NAVAL DREDGER

TARAK Y 1029

Of 200 tons.

4 Ex-US FLOATING CRANES

ALGARNA 1, 2, 3 Y 1021-1023

Transferred September 1963. *Algarna 1* is ex-US *YD 185*.

TURGUT ALP Y 1024

15 UTILITY CRAFT

MAVNA 1-15 Y 1181-1193, 1198 and 1199

TAKIP Y 1052

UNION OF SOVIET SOCIALIST REPUBLICS

Ministerial

Minister of Defence:
Marshal Dimitri Ustinov

Flag Officers Soviet Navy

Commander-in-Chief of the Soviet Navy and Deputy Minister of Defence:
Admiral of the Fleet of the Soviet Union Sergei Georgiyevich Gorshkov
1st Deputy Commander-in-Chief of the Soviet Navy:
Admiral of the Fleet N. I. Smirnov
Chief of Main Naval Staff:
Admiral of the Fleet G. M. Yegorov
1st Deputy Chief of the Main Naval Staff:
Admiral P. N. Navoytsev
Deputy Commander-in-Chief (Operational Training):
Admiral G. A. Bondarenko
Deputy Commander-in-Chief (Shipbuilding and Armaments):
Engineer Admiral P. G. Kotov
Deputy Commander-in-Chief (Rescue and Salvage):
Engineer Admiral V. G. Novikov
Deputy Commander-in-Chief (Rear Services):
Admiral L. V. Mizin
Deputy Commander-in-Chief (Training Establishments):
Vice-Admiral A. M. Kosov
Commander of Naval Aviation:
Colonel-General A. A. Mironenko
1st Deputy Commander Naval Aviation:
Colonel-General A. N. Tomashevsky
Chief of Staff to Commander Naval Aviation:
Colonel-General G. A. Kuznetsov
Chief of Political Directorate, Naval Aviation:
Major General I. M. Tropynin
Chief of the Political Directorate (Naval):
Admiral A. I. Sorokin
1st Deputy Chief of Political Directorate (Naval):
Vice-Admiral N. V. Usenko
Chief of the Hydrographic Service:
Admiral A. I. Rassokho

Deputy Chief of General Staff:
Admiral N. N. Amelko
Deputy Commander-in-Chief Warsaw Pact Forces:
Admiral V. V. Mikhaylin
Deputy Head Main Political Directorate:
Vice-Admiral N. I. Shablikov

Northern Fleet

Commander-in-Chief:
Admiral V. N. Chernavin
1st Deputy Commander-in-Chief:
Vice-Admiral V. S. Kruglyakov
Chief of Staff:
Vice-Admiral V. Ponikarovsky
In Command of the Political Department:
Vice-Admiral Usenko
Commander Naval Aviation:
Major-General V. P. Potapov
Deputy Commander-in-Chief (Rear Services):
Rear-Admiral Y. Petrov

Pacific

Commander-in-Chief:
Admiral V. V. Sidorov
1st Deputy Commander-in-Chief:
Vice-Admiral N. Y. Yasakov
Chief of Staff:
Vice-Admiral Ya. M. Kudelkin
In Command of the Political Department:
Rear Admiral N. P. Dyakonskiy
Commander Naval Aviation:
Lieutenant-General —
Deputy Commander-in-Chief (Rear Services):
Rear-Admiral M. A. Kosyachenko

Black Sea

Commander-in-Chief:
Admiral N. I. Khovrin
1st Deputy Commander-in-Chief:
Vice-Admiral V. A. Samoylov
Chief of Staff:
Vice-Admiral V. I. Akimov
In Command of the Political Department:
Rear-Admiral R. N. Likhvonin
Commander Naval Aviation:
Colonel-General W. I. Voronov
Deputy Commander-in-Chief (Rear Services):
Rear-Admiral N. Yermakov

Baltic

Commander-in-Chief:
Vice-Admiral I. M. Kapitanets
1st Deputy Commander-in-Chief:
Vice-Admiral —
Chief of Staff:
Vice-Admiral A. M. Kalinin
In Command of the Political Department:
Rear-Admiral I. F. Alikov
Commander Naval Aviation:
Lieutenant-General A. I. Pavlovsky
Deputy Commander-in-Chief (Rear Services):
Rear-Admiral P. P. Belous

Caspian Flotilla

Commander-in-Chief:
Vice-Admiral G. G. Kasumbekov
Chief of Staff:
Rear-Admiral V. M. Buynov
In Command of the Political Department:
Captain V. P. Nekrasov

Indian Ocean Squadron:

Rear-Admiral M. Khronopulov

Mediterranean Fleet:

Vice-Admiral N. I. Ryabinsky

Leningrad Naval Base

Commander:
Vice-Admiral A. P. Mikhailovsky
Chief of Staff:
Rear-Admiral Y. Butuzov
In Command of the Political Department:
Engineer Vice-Admiral A. A. Plekhanov
Head of the A. A. Grechko Naval Academy:
Admiral V. S. Sysoyev
Head of Frunze Naval College:
Rear-Admiral N. K. Fedorov

Diplomatic Representation

Naval Attaché in Berlin (DDR):
Rear-Admiral M. N. Lyshchin
Naval Attaché in London:
Captain A. Zotov
Naval Attaché in Oslo:
Rear-Admiral I. G. Smirnov
Naval Attaché in Paris:
Rear-Admiral V. M. Golitsyn
Naval Attaché in Washington:
Rear-Admiral A. P. Sakulkin

Personnel

(a) 1981: 433,000 officers and ratings (Afloat, 175 000; Naval Aviation, 59 000; Training, 54 000; Naval Infantry, 12 000; Coastal Defence, 8 000; Shore Support, 125 000)
Deployed: Northern 112 000, Baltic 105 000, Black Sea 99 000, Pacific 117 000
(b) Approximately 18 per cent volunteers (officers and senior ratings)—remainder 3 years' national service at sea and 2 if ashore.

Main Naval Bases

North: Severomorsk (HQ), Motovsky Gulf, Polyarny, Severodvinsk (building)
Baltic: Leningrad (Kronshtadt), Tallinn, Liepaya, Baltiisk (HQ)
Black Sea: Sevastopol (HQ), Tuapse, Poti, Balaclava, Odessa, Nikolayev (building)
Pacific: Vladivostock (HQ), Sovetskaia Gavan, Magadan, Petropavlovsk

Pennant Numbers

The Soviet Navy has frequent changes of pennant numbers with change of fleet and so these are of little use in identifying individual ships. The last major overall change of numbers took place in 1978. For that reason such a list has been omitted in this section.
It will be noticed that, in some cases, the same ship has different numbers in different photographs.

Deletions and Conversions

Whilst it is not possible to provide an accurate estimate of total deletions and conversions during the last year the following is a guide to those estimates used in this section.

Destroyers
"Kashin" class conversions with SSM appear to be postponed, at least.

Fast Attack Craft
Deletion of all "P 6" class.

Service Forces
Conversion of several more tankers for underway replenishment.

Mercantile Marine

Lloyd's Register of Shipping:
8 279 vessels of 23 443 534 tons gross

Building Programme

The following is an abstract of the programme used in estimating force levels.

Submarines
"Typhoon" class building. "Oscar" class building. Continuing programme for "Delta III", "Charlie II", "Alfa", "Victor III" and "Tango" classes.

Aircraft Carriers
Possible CVN programme.
One "Kiev" class completing, one building.

Cruisers
"Kara" class completed. New construction of nuclear powered "Kirov" class and three new cruiser classes.

Frigates
Both "Krivak I and II" classes continue. "Koni" class continues. Also provided for export—East Germany has received two and Yugoslavia one.
"Grisha III" class continues.

Light Forces
"Nanuchka III" and "Matka" classes continue. "Nanuchka II" class continues for export.
"Pauk" class continue.
"Zhuk" class coastal patrol craft continue.

Mine Warfare Forces
"Sonya" class (MSC) continues.
"Yevgenya" class (MSI) continues.
"Olya" class (MSB) building.

Amphibious Forces
"Rogov" class (LSD) continues slowly.

Air Cushion Vehicles
A large programme.

Service Forces
"Ingul", "Sorum" classes tugs continue.

Several types and classes have been revised from new information, not necessarily as new construction.

Strength of the Fleet

Type	Active	Type	Active	Type	Active
Submarines (SSBN)	70 + 3 building	Patrol Ships	18	Oceanographic Research Ships	32 + 24 (civilian)
Submarines (SSB)	19	Fast Attack Craft (Missile)	120	Missile Range Ships	6
Submarines (SSGN)	46 + 2 building	Hydrofoils (Missile)	11 + 3 building	Space Associated Ships	0 + 13 (civilian)
Submarines (SSG)	21	Fast Attack Craft (Patrol)	156	Training Ships	7
Submarines (SSN)	50 + 3 building and 5 converting	Fast Attack Craft (Hydrofoil)	51	Replenishment Tankers	27
		Fast Attack Craft (Torpedo)	30	Support Tankers	28
Submarines (SS)	*160 + 3 building	Large Patrol Craft	63	Special Tankers	13
Nuclear Aircraft Carrier	0 + 1? building	River Patrol Craft	80 *	Salvage and Mooring Vessels	44
Aircraft Carriers (CV)	2 + 2 building	Coastal Patrol Craft	25	Submarine Rescue Ships	20
Helicopter Cruisers (CHG)	2	Minesweepers—Ocean	144	Icebreakers (Nuclear)	0 + 3 (civilian)
Battle Cruisers (CGN)	1 + 1 building	Minesweepers—Coastal	128 + 3 building	Icebreakers	13 + 43 (civilian)
Cruisers (CG)	27 + 10 building	Minesweepers—Inshore	53	Cable Ships	13 + 2 building
Cruisers (Gun)	11	Minesweeping Boats	50	Large Tugs	78 +
Destroyers (DDG)	39	LPDs	1 + 1 building	Transports and Cargo Ships	64
Destroyers (Gun)	**34	LSTs	25	Hovercraft	51
Frigates (Missile)	29 + 3 building	LSMs	60	Auxiliaries	220
Frigates	155 + 2 building (a number in reserve)	Depot Support and Repair Ships	67 + 1 building		
Corvettes (Missile)	23	Intelligence Collectors (AGI)	58	* plus about 100 in reserve.	
Corvettes	64	Survey Ships	95 + 35 (civilian)	** plus 14 in reserve.	

Approximate Deployments

The following figures do not attempt to give an exact deployment of the Soviet Navy but offer an approximate apportionment of the totals given above. It must be remembered that at any normal time at least some ten per cent of submarines, cruisers, destroyers, frigates, amphibious forces, depot ships and service forces are deployed "out of area" ie in the Mediterranean, Indian Ocean, West Africa etc or on passage. This figure is normally higher for ballistic missile submarines.

Fleets

Type	Northern	Baltic	Black Sea and Caspian	Pacific	Type	Northern	Baltic	Black Sea and Caspian	Pacific
SSBN	46	—	—	24	FF and Corvettes	45	25	40	45
SSB	5	6	—	8	FAC(M) and Missile Corvettes	30	54	24	45
SSGN	28	—	—	18	Light Forces	35	45	105	70
SSG	12	2	3	4	MCM Forces	75	125	90	90
SSN	35	—	—	15	LPD	—	—	—	1
SS*	60	20	20	60	LST	7	3	5	10
CV	1	—	—	1	LSM	5	20	20	15
CHG	—	—	2	—	Depot Repair and Support Ships	24	6	19	18
CGN	1	—	—	—	Underway Replenishment Ships	6	3	7	11
CG	10	1	8	8	Support Tankers	10	5	6	6
DDG	8	5	16	10	Hovercraft	—	20	14	17
FFG	7	10	5	7					
CL	2	2	3	4	* In addition about 100 believed in reserve.				
DD**	5	7	11	11	** In addition 2 "Kotlin" class and 12 "Skory" class in reserve.				

SOVIET NAVAL AVIATION

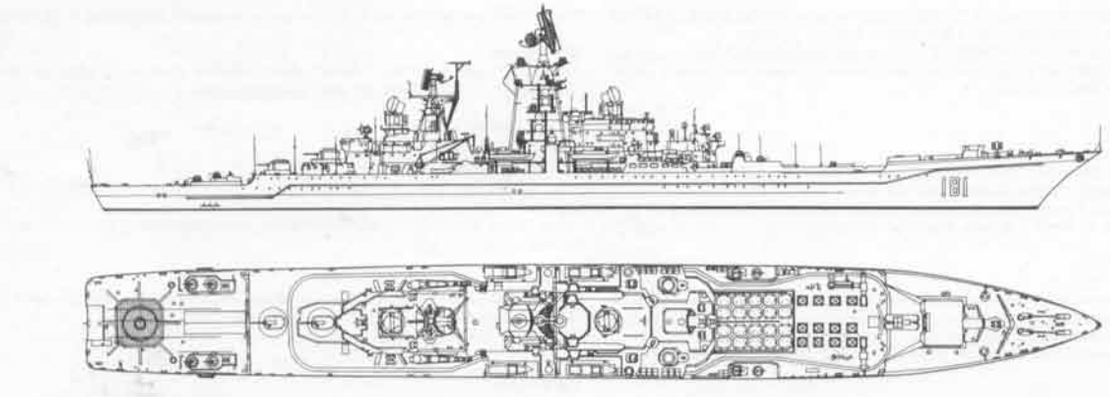
Overall totals: 1 330 aircraft; 59 000 officers and men.

Tactical deployment: A total of 380 strike/bombers (Badger, Backfire and Blinder), 75 fighter/fighter bombers (Forger and Fitter).
Deployed as follows: Northern 90, Baltic 135, Black Sea 110, Pacific 120.

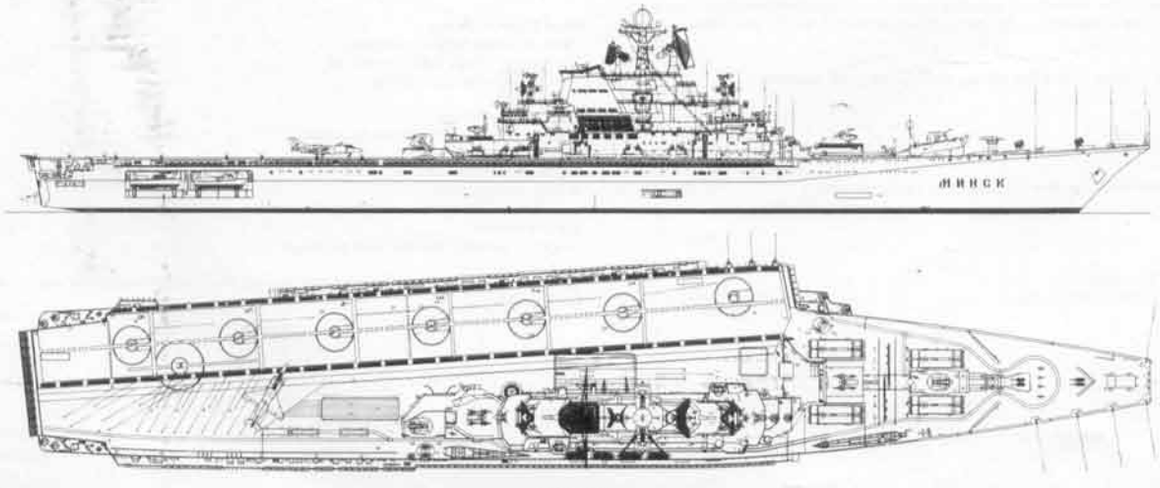
Tactical support deployment: A total of 235 (Badger, tankers; Bear D, Badger and Blinder, reconnaissance and electronic warfare).
Deployed as follows: Northern 80, Baltic 45, Black Sea 40, Pacific 70.

Anti-submarine warfare deployment: A total of 405 (Bear F, May, Mail, Hormone A and Haze A).
Deployed as follows: Northern 120, Baltic 50, Black Sea 110, Pacific 125.

Transport/training deployment: A total of 310.
Deployed as follows: Northern 75, Baltic 45, Black Sea 120, Pacific 70.

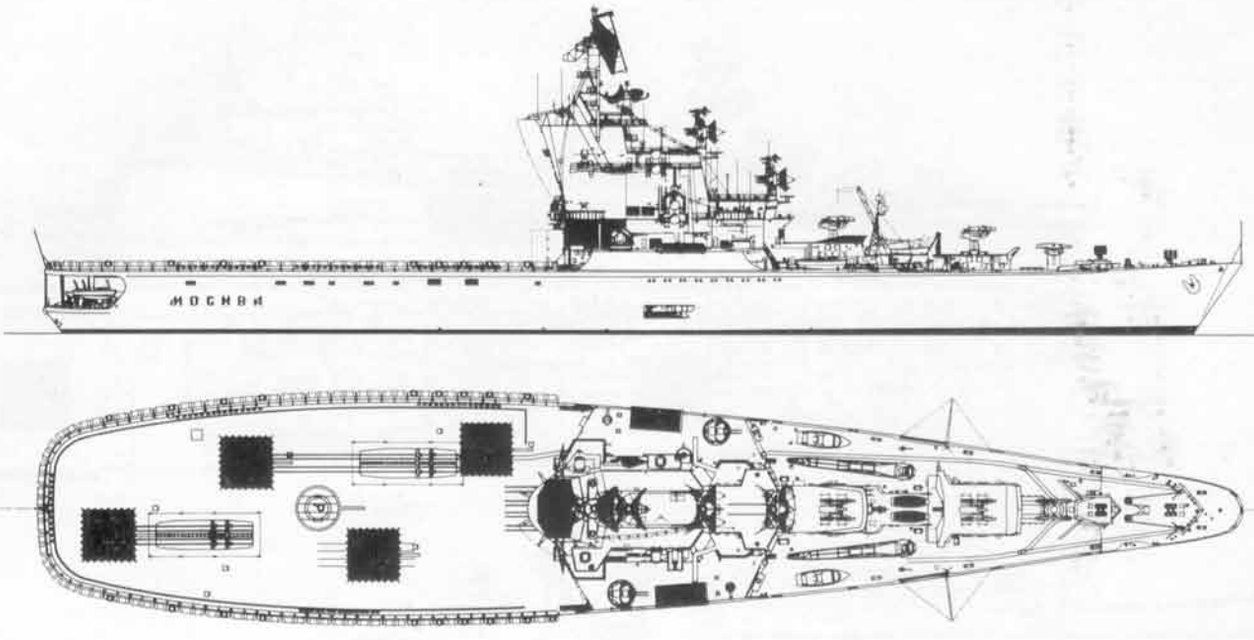


"KIROV" Class

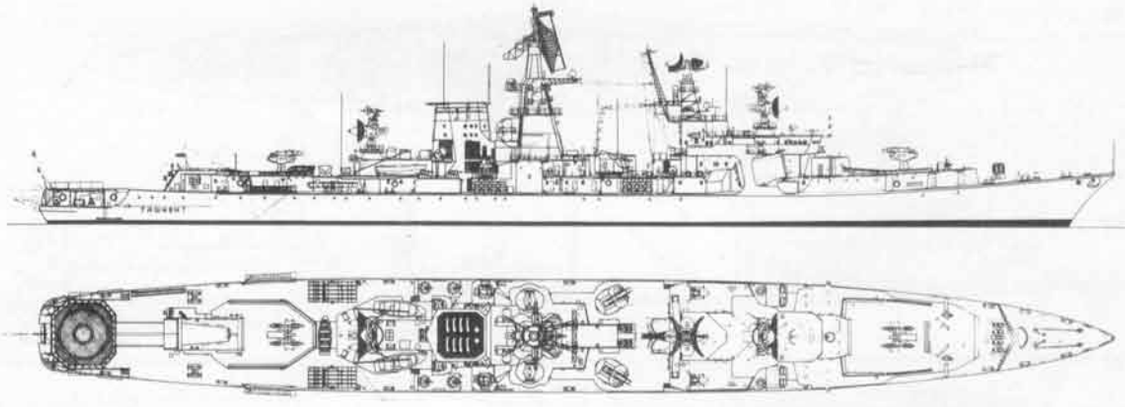


(Scale 1 : 1 800)

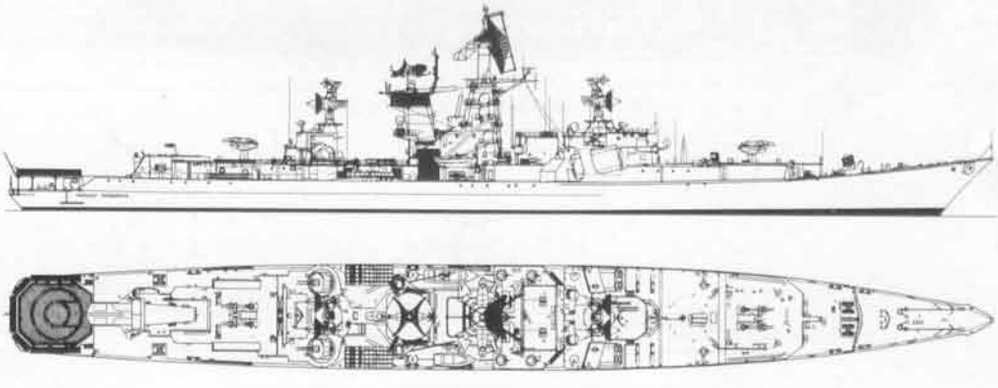
"KIEV" Class



"MOSKVA" Class



"KARA" Class



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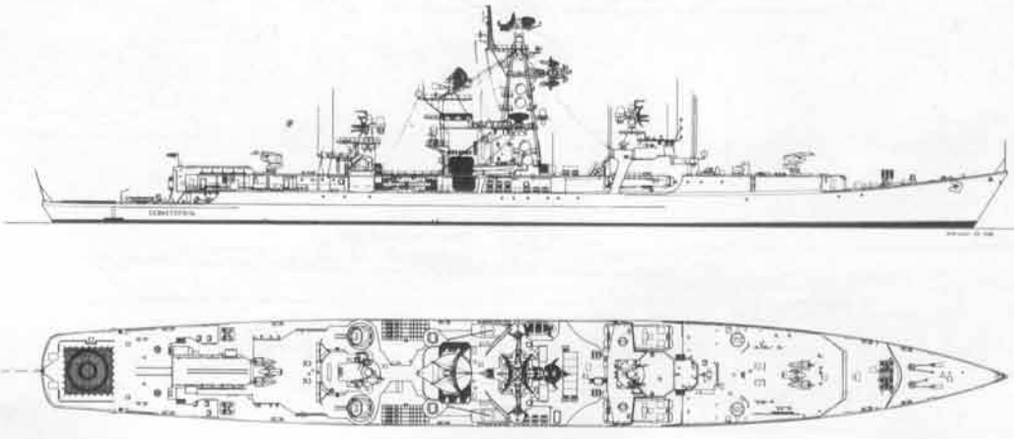

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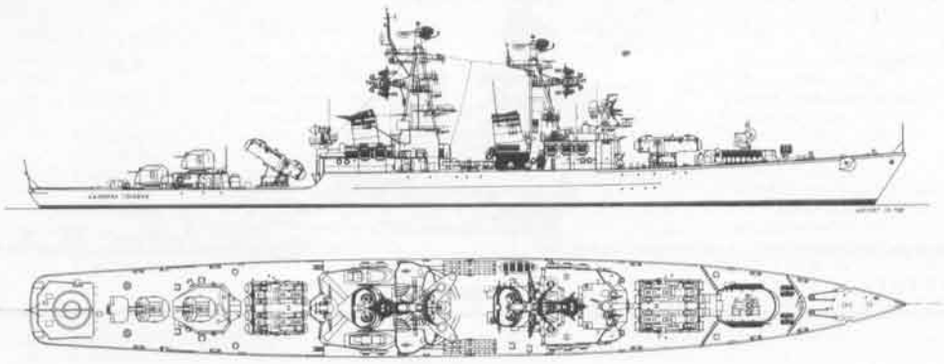

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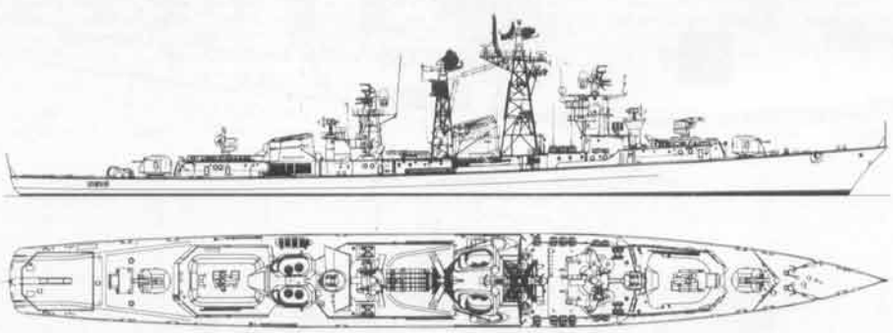
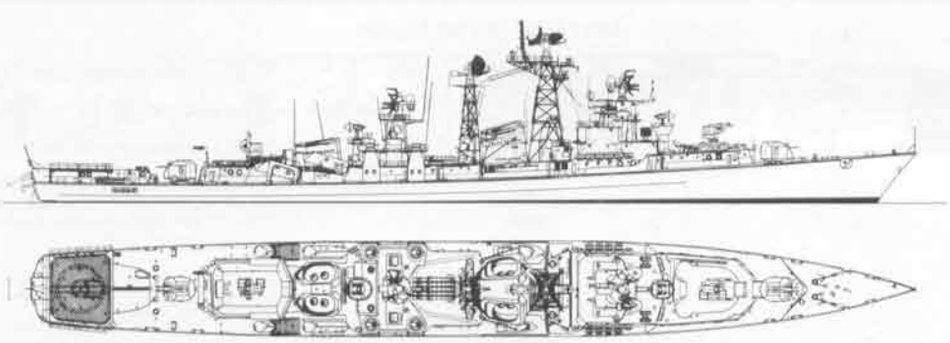
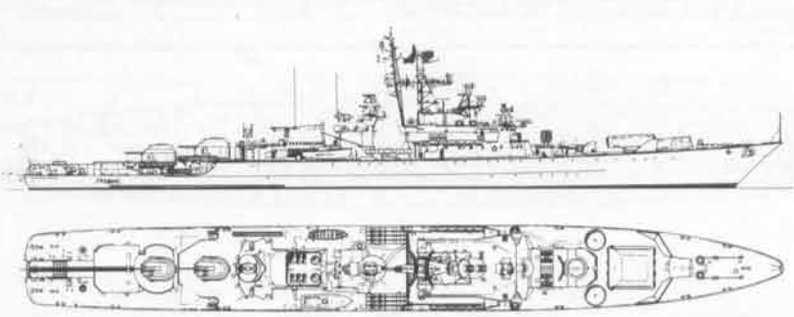


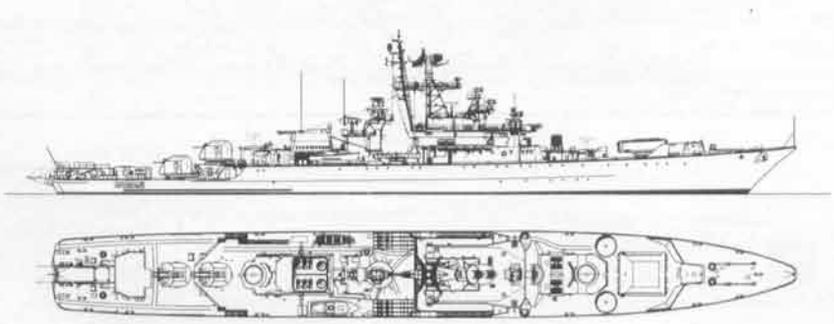
"KASHIN" Class



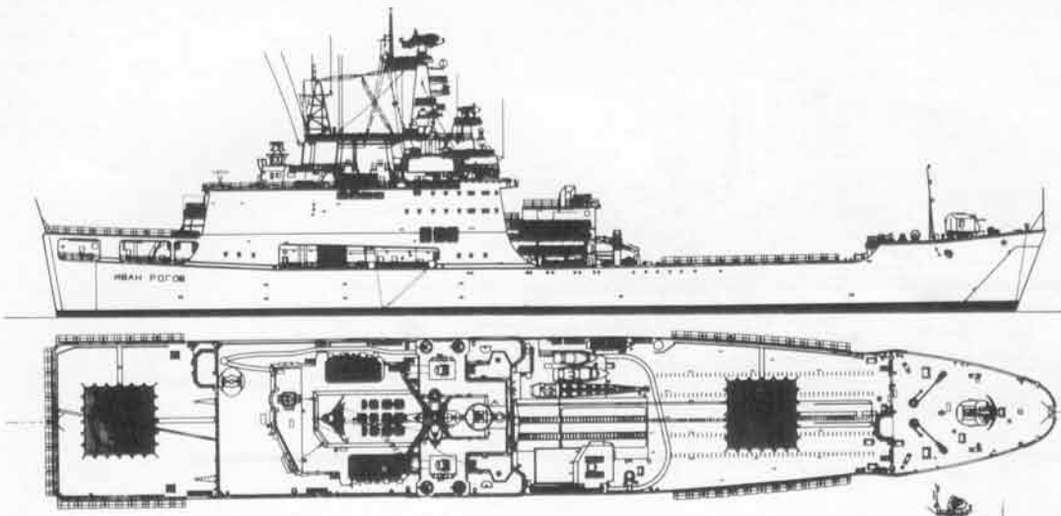
"MODIFIED KASHIN" Class



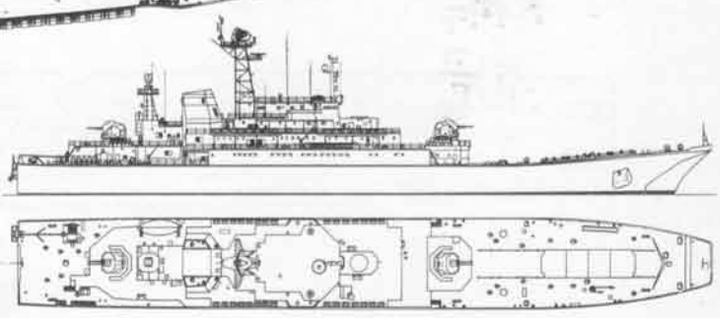
"KRIVAK II" Class



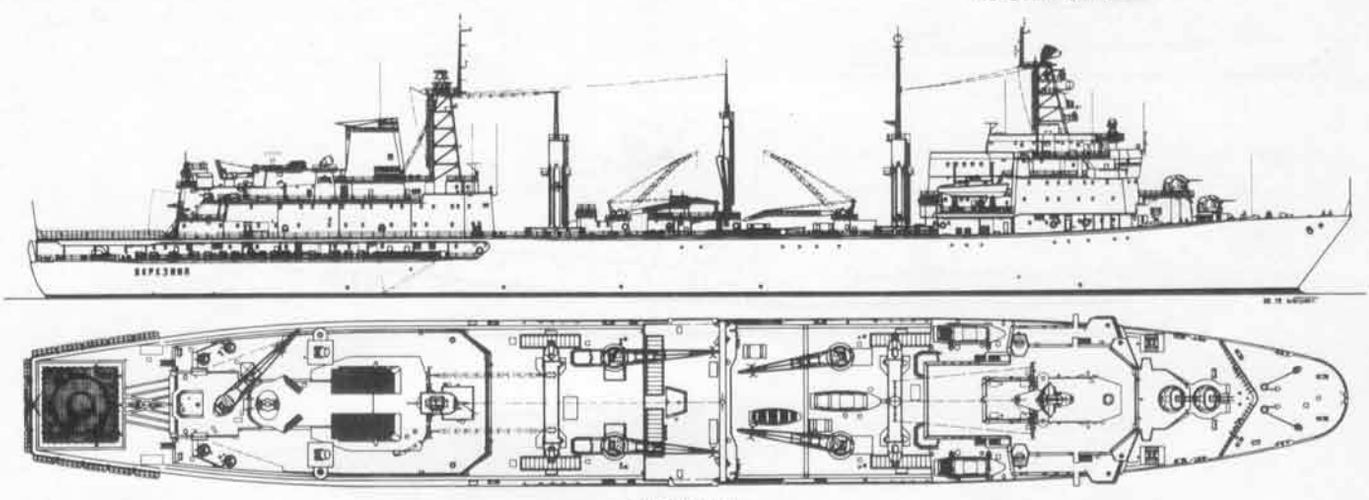
"KRIVAK I" Class



"IVAN ROGOV" Class

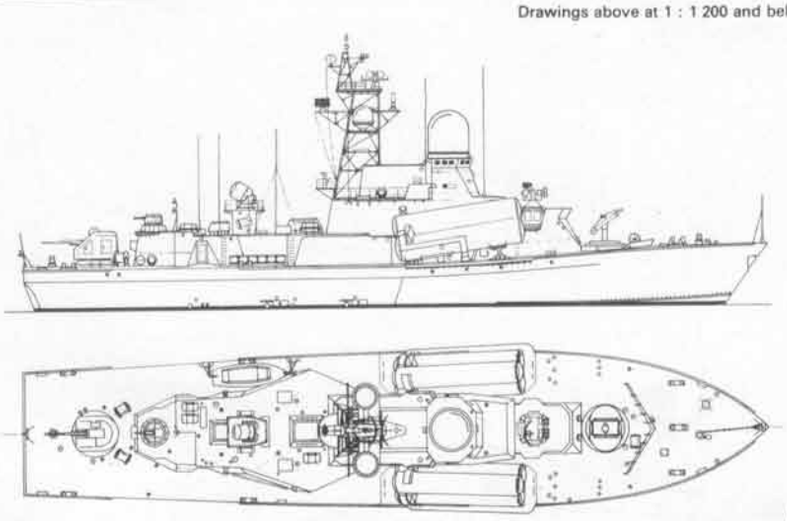


"ROPUCHA" Class

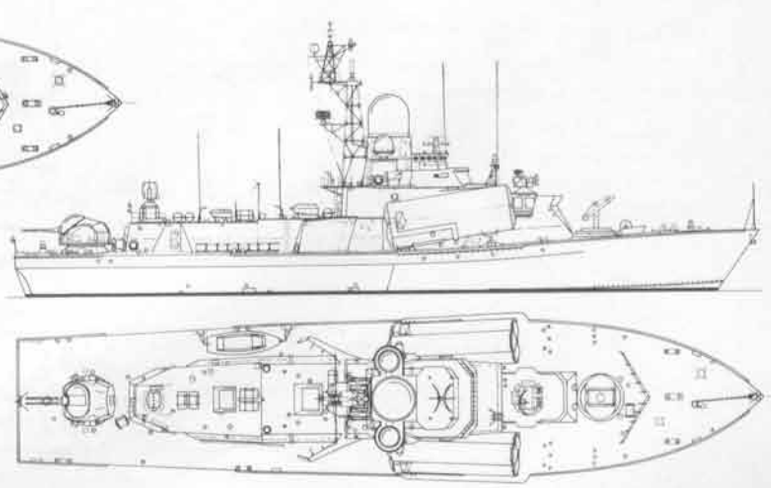


"BEREZINA" Class

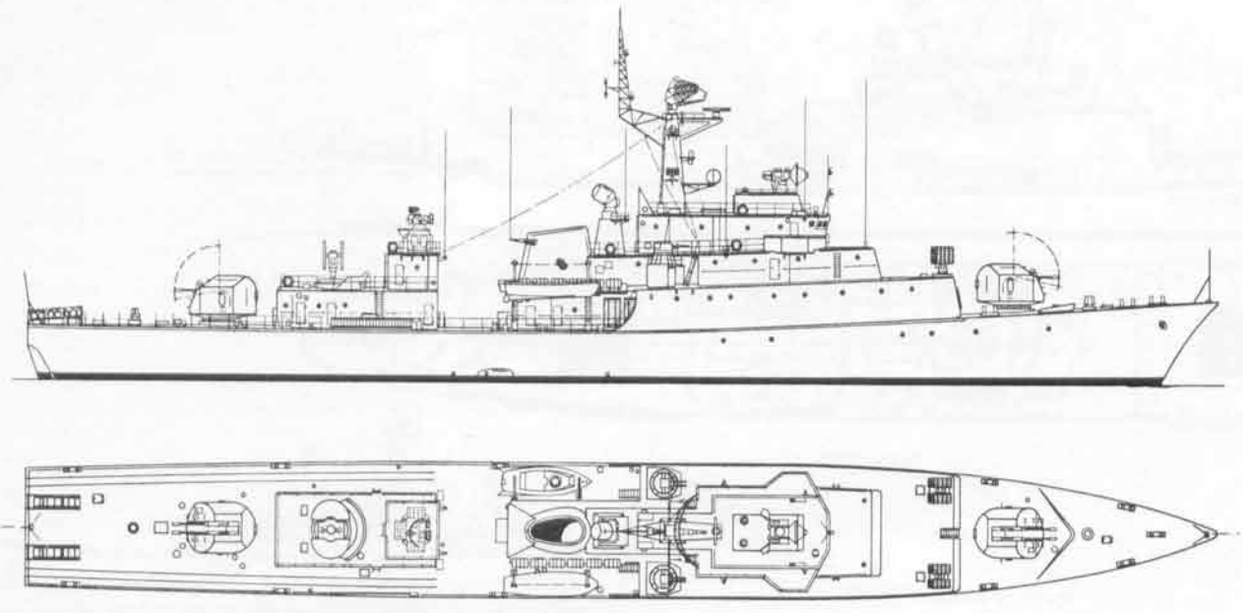
Drawings above at 1 : 1 200 and below at 1 : 600.



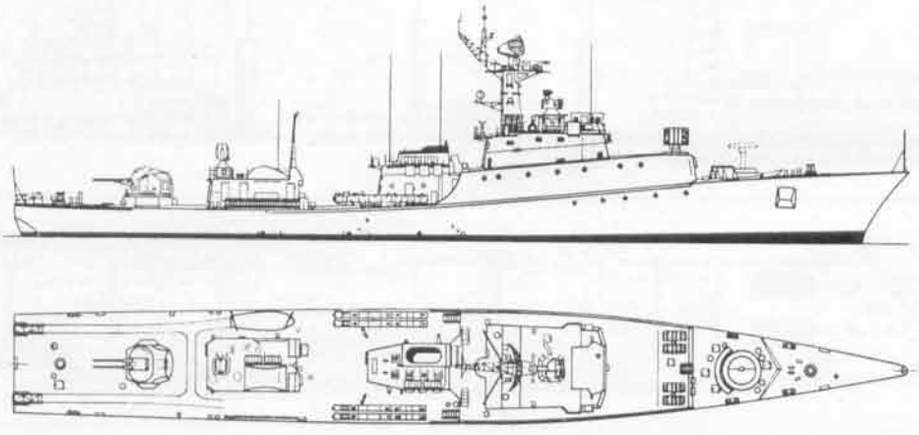
"NANUCHKA III" Class



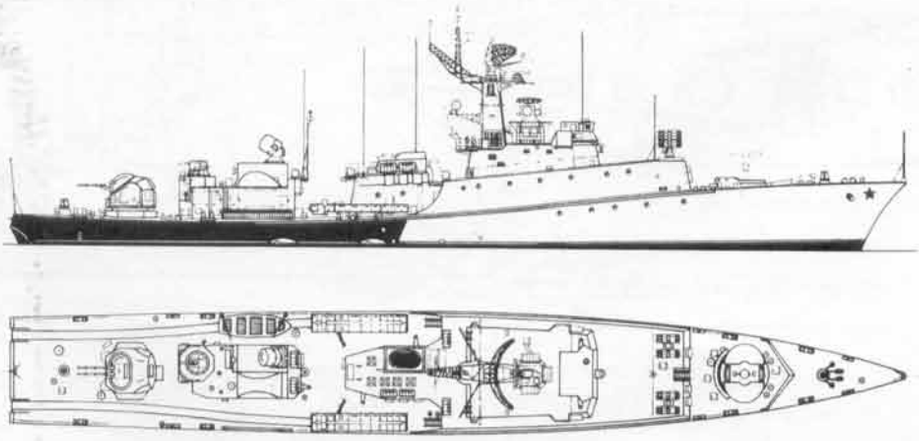
"NANUCHKA I" Class



"KONI" Class

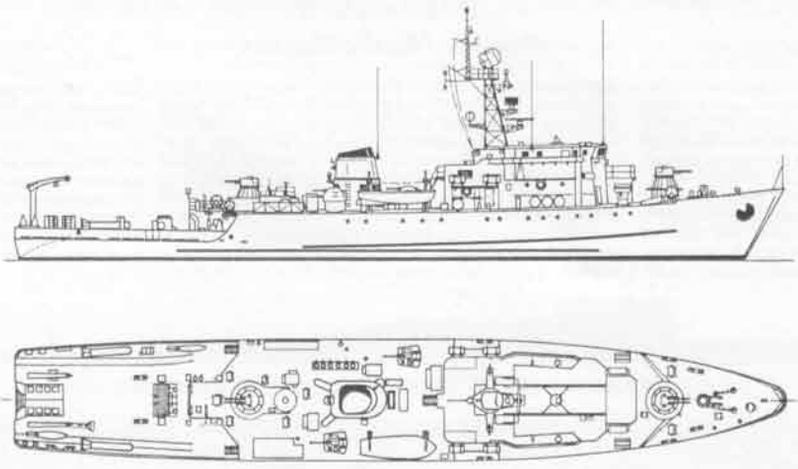


"GRISHA I" Class

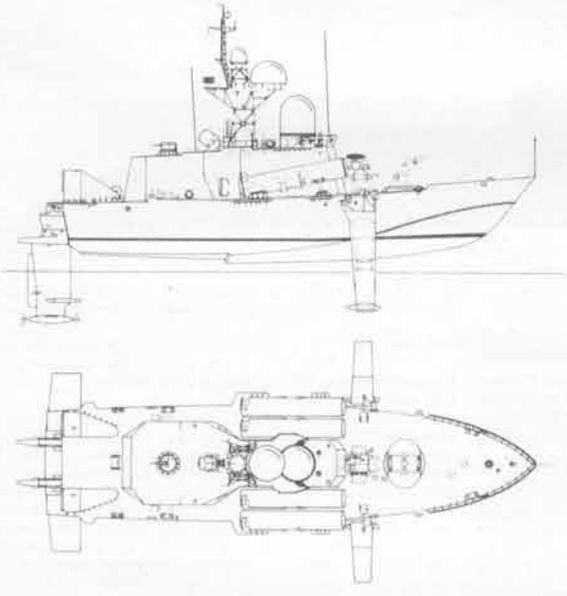


"GRISHA III" Class

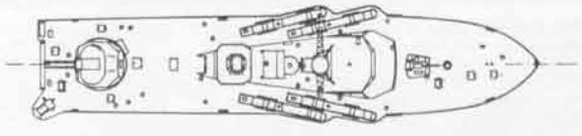
(Scale 1 : 600)



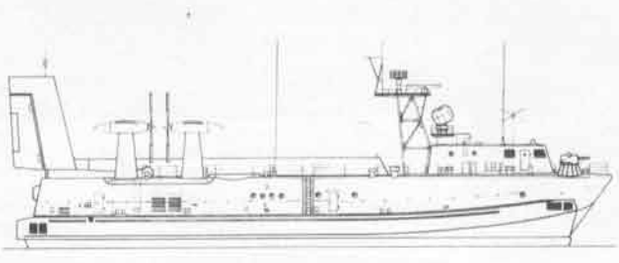
"NATYA" Class

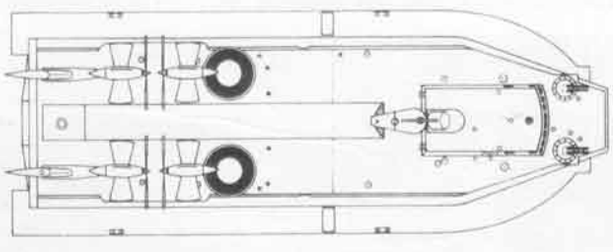


"SARANCHA" Class

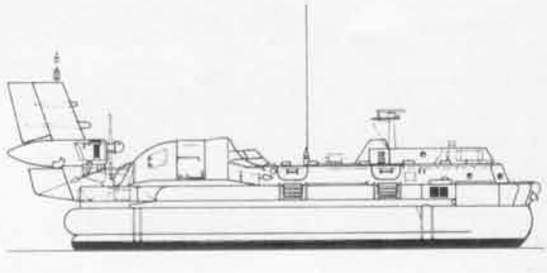


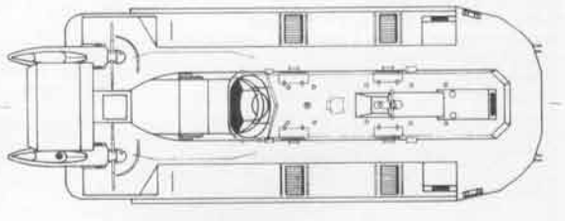
"TURYA" Class





"AIST" Class





"GUS" Class

Drawings at 1 : 600 except "Gus" Class at 1 : 300.

All drawings by Norbert Weisner

SUBMARINES
Ballistic Missile Classes

Note: The development of Soviet submarine launched ballistic missiles dates from early trials with German V-2 (A4) missiles. The Lafferentz Project of 1944 was for the launching of V-2 from capsules towed by U-boats. The Soviets probably attempted such operations with the Golem series of missiles without success and then turned to tube launchers.
The deployment of operational missiles dates from the development of the 300 mile surface launched SS-N-4 missile which was first launched in September 1955. The "Zulu V" class was converted to carry this missile in two tubes in the fin. All this class now deleted. In 1958 the diesel-propelled "Golf" class appeared and in 1959 the nuclear "Hotel" class. Both originally carried the SS-N-4 but from 1962 all the "Hotel" class and thirteen of the "Golf" class were converted for the 700 mile SS-N-5 which had the added advantage of dived-launch capability. Both the 4 and 5 missiles carried a megaton head and were 42·5 ft long but the apparent lack of an inertial navigation system in the submarines may have presented target problems. The SS-N-6 was installed in the "Yankee" class, with a 1 300 mile range. In 1971 Mk II and III of SS-N-6 with 1 600 mile range and MRV warheads were tested and are now operational. Recently the SS-N-17, with a range of 1 700 n. miles and with solid propellant has been noted.
In the late 1960s the SS-N-8 was first tested and this was fitted in the "Delta I" class and subsequently the "Delta II". This is a much larger missile (42·5 ft long) than the SS-N-6 with a range of 4 200 n. miles and required the increased size of the "Delta" classes to house it. The SS-N-18, now being fitted in the "Delta III" class has a MIRV capability and a range of 4 000 n. miles.
In early 1980 a new type of solid-fuelled SLBM, SS-NX-20, was tested. This is larger than SS-N-18 and probably has a MIRV head with a maximum range of over 4 200 n. miles.

1 + ? "TYPHOON" CLASS (BALLISTIC MISSILE SUBMARINES SSBN)

Displacement, tons: approx 30 000 tons dived
Dimensions, feet (metres): 600 × 75 × ? *(183 × 22·9 × ?)*
Missiles: 20 tubes for SS-NX-20 (see note)
Torpedo tubes: Possibly 6 or 8—21 in *(533 mm)*
Main machinery: 2 nuclear reactors; 2 steam turbines; 2 shafts; ? 120 000 shp
Speed, knots: ? 24
Complement: ? 150

This is the largest submarine ever built and was launched at Severodvinsk in September 1980. The unique features of "Typhoon" are her enormous size and the fact that the missile tubes are mounted forward of the fin. The reasons for these are not clear, although this huge craft could operate in any ocean of the world and still have its main targets within range. The positioning of the launch tubes forward of the fin would provide a fully integrated weapons area in the bow section leaving space abaft the fin for the provision of two nuclear reactors—probably needed to achieve a reasonable speed with this huge hull.

Missiles: The existence of a new missile was shown in flight tests in January 1980 but four apparent failures in four tests were then noted. The SS-NX-20 is probably a solid-fuel missile with a designed range greater than 4 200 miles and a MIRV capability.

Protection: This class could have a separation of 13-15 ft between the outer and inner hulls.

"TYPHOON" Class

11 + 1 "DELTA III" CLASS (BALLISTIC MISSILE SUBMARINES SSBN)

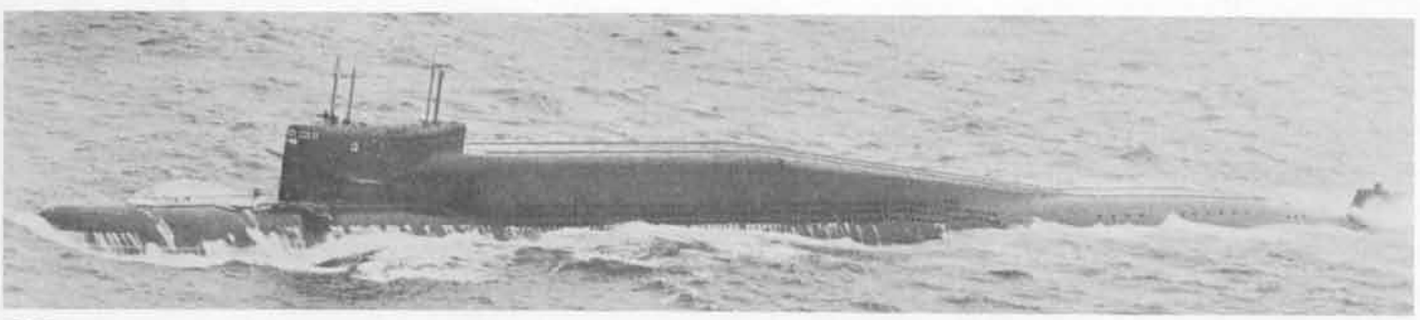
Displacement, tons: 11 000 surfaced; 13 250 dived
Dimensions, feet (metres): 509 × 39·4 × 33·4 *(115·5 × 12 × 10·2)*
Missiles: 16—SS-N-18 tubes
Torpedo tubes: 6—21 in *(533 mm)* (18 torpedoes)
Main machinery: 1 nuclear reactor; 2 steam turbines; 60 000 shp; 2 shafts with 5-bladed propellers
Speed, knots: 24 dived
Complement: 132

The missile casing is somewhat higher than in "Delta II" class. The SS-N-18 are liquid-fuelled missiles of 4 000 n. mile range, with three or seven MIRVs. Built at Severodvinsk 402 and Komsomolets. First pair laid down in 1974, four in 1975, two in 1976, two in 1977, two in 1978.

Communications: ELF/VLF with floating aerial; UHF and SHF aerials.

Radar: One Snoop Tray.

Sonar: LF bow array.



"DELTA III" Class

1979

4 "DELTA II" CLASS (BALLISTIC MISSILE SUBMARINES SSBN)

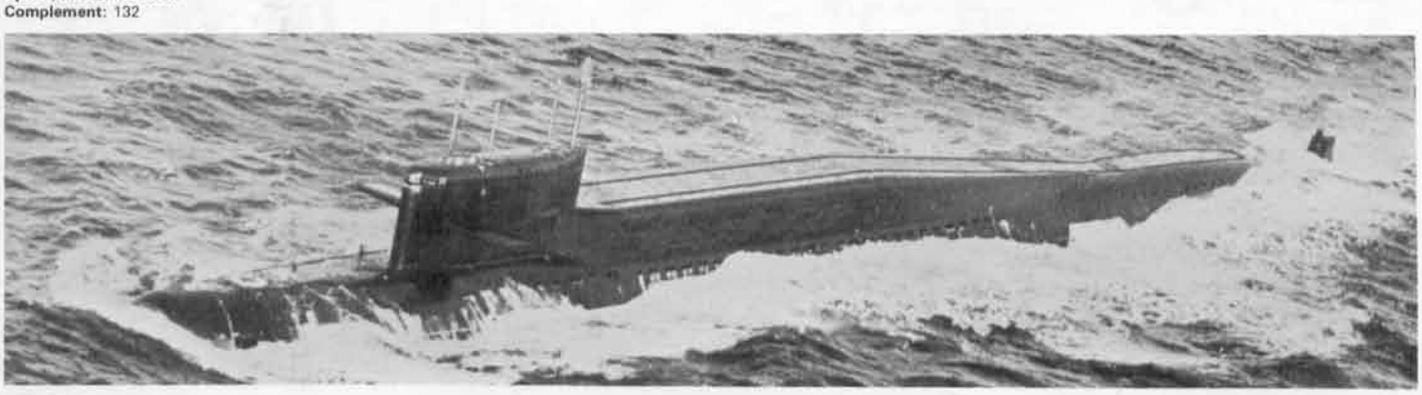
Displacement, tons: 9 600 surfaced; 11 400 dived
Dimensions, feet (metres): 500·9 × 38·7 × 33·5 *(152·7 × 11·8 × 10·2)*
Missiles: 16—SS-N-8 tubes
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Main machinery: 2 steam turbines; 1 nuclear reactor; 60 000 shp; 2 shafts
Speed, knots: 25 dived
Complement: 132

First reported November 1973. A larger edition of "Delta I" with a straight run on the after part of the missile casing. Building yard—Severodvinsk. First laid down 1971, second in 1972, third in 1973, fourth in 1974.

Communications: ELF/VLF with floating aerial; UHF and SHF aerials.

Radar: One Snoop Tray.

Sonar: LF bow array.



"DELTA II" Class

1979

18 "DELTA I" CLASS (BALLISTIC MISSILE SUBMARINES SSBN)

Displacement, tons: 8 600 surfaced; 10 000 dived
Dimensions, feet (metres): 446·1 × 38 × 32·8 *(136 × 11·6 × 10)*
Missiles: 12—SS-N-8 tubes
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Main machinery: 1 nuclear reactor; 2 steam turbines; 2 shafts; 60 000 shp
Speed, knots: 25 dived
Complement: 120

This advance on the "Yankee" class SSBNs was announced at the end of 1972. The missile armament is 12 SS-N-8s with a range of nearly 5 000 n. miles and fitted with a single warhead. As the SS-N-6 has already been tested with MRV warheads, however, it is not unlikely that these missiles will in due course be similarly armed. The longer-range SS-N-8 missiles are of greater length than the SS-N-6s and, as this length cannot be accommodated below the keel, they stand several feet proud of the after-casing. At the same time the need to compensate for the additional top-weight would seem to be the reasons for the reduction to 12 missiles in this class. Programme probably completed 1973-77.
Building yards—Severodvinsk and Komsomolsk.

Communications: EHF/VLF with floating aerials; UHF and SHF aerials.

Radar: One Snoop Tray.

Sonar: LF bow array.

"DELTA I" Class

"DELTA I" Class

1976

29 + 5 "YANKEE" CLASS (See "Class" note) (BALLISTIC MISSILE SUBMARINES SSBN)

Displacement, tons: 7 800 surfaced; 9 300 dived
Dimensions, feet (metres): 424·6 × 38 × 25·6 *(129·5 × 11·6 × 7·8)*
Missiles: 16—SS-N-6 tubes (see note)
Torpedo tubes: 6—21 in *(533 mm)*; 18 torpedoes carried
Main machinery: 1 nuclear reactor; 2 steam turbines; 2 shafts; 40 000 shp
Speed, knots: 30 dived
Complement: 120

"YANKEE" Class

The vertical launching tubes are arranged in two rows of eight, and the SS-N-6 missiles have a range of 1 300/1 600 n. miles. These missiles have been tested with MRV warheads and these are now operational. At about the time that the USS *George Washington* was laid down (1 November 1957) as the world's first SSBN it is likely that the Soviet Navy embarked on its own major SSBN programme. With experience gained from the diesel-propelled "Golf" class and the nuclear-propelled "Hotel" class, the "Yankee" design was completed. Modelled on the USS "Ethan Allen" design. The first of the class was laid down in 1965 and delivered late 1967 and the programme then accelerated from three hulls laid down in 1966 to five in 1967, seven in 1968, eight in 1969, six in 1970, three in 1971 and one in 1972, the last of the class being completed in 1976. Construction took place at Severodvinsk and Komsomolsk. The original deployment of this class was to the Eastern seaboard of the US giving a coverage at least as far as the Mississippi. Increase in numbers allowed a Pacific patrol to be established off California extending coverage at least as far as the Rockies.

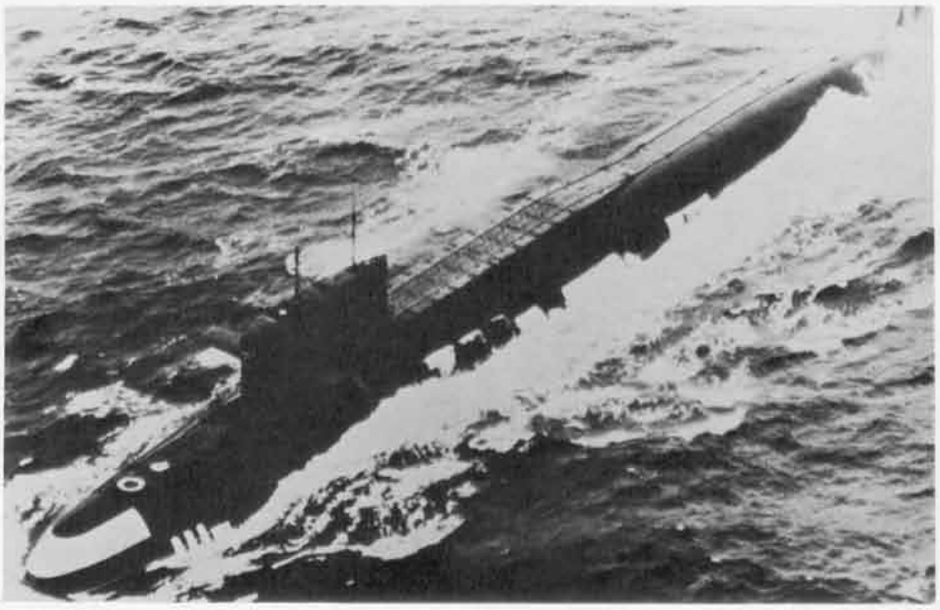
Appearance: Fin mounted fore-planes.

Class: Of the total of 34 built, 28 are fitted with SS-N-6 Mod 1 (1 300 n. miles), or with SS-N-6 Mod 3 (1 600 n. miles) and one with 12 SS-N-17 (1 700 n. miles—solid propellant) ("Yankee II").
The other five have had their missile tubes removed and may be converting to SSNs—the first taken in hand in 1978.

Communications: Fitted for ELF with floating aerial and possibly VLF buoy. VHF and SHF aerials.

Engineering: The twin screws and great horsepower give this class a speed advantage over some western counterparts.

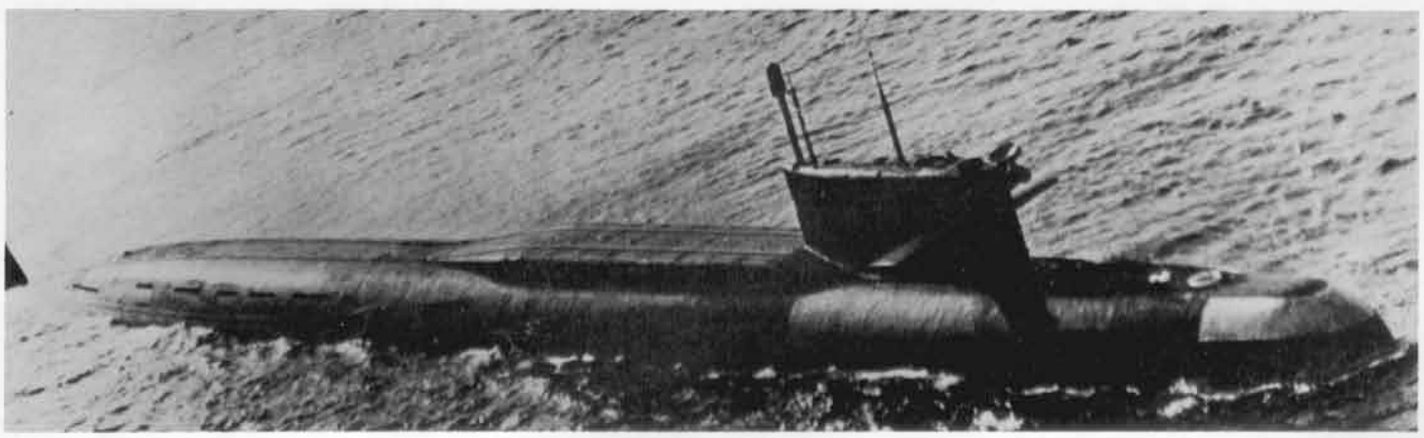
Missiles: SS-N-6 Mod 3 has a MRV capability (3 warheads).



"YANKEE" Class

Radar: One Snoop Tray.

Sonar: MF or LF bow array.



"YANKEE" Class

1 "HOTEL III" and 7 "HOTEL II" CLASSES (BALLISTIC MISSILE SUBMARINES SSBN)

Displacement, tons: 4 750 surfaced; 5 600 dived
Dimensions, feet (metres): 377·2 × 29·8 × 25 *(115·2 × 9·1 × 7·6)*
Missiles: 3—SS-N-5 tubes
Torpedo tubes: 6—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); 20 torpedoes carried
Main machinery: 1 nuclear reactor; 2 steam turbines; 2 shafts; 25 000 shp
Speed, knots: 26 dived
Complement: 90

Three vertical ballistic missile tubes in the large fin. All this class was completed as "Hotel I" class between 1958 and 1962. Originally fitted with SS-N-4 system with Sark missiles (350 n. miles). Between 1962 and 1967 this system was replaced by the dived launch SS-N-5 system with Serb missiles capable of 700 n. mile range the class then being renamed "Hotel II". A number of these boats was deployed off both East and West coasts of the USA and Canada. The "Hotel III" is a single unit converted for the test firings of the SS-N-8 (carries six missiles). The earlier boats of this class, which was of a similar hull and reactor design to the "Echo" class will, by 1981, be reaching their twentieth year in service.

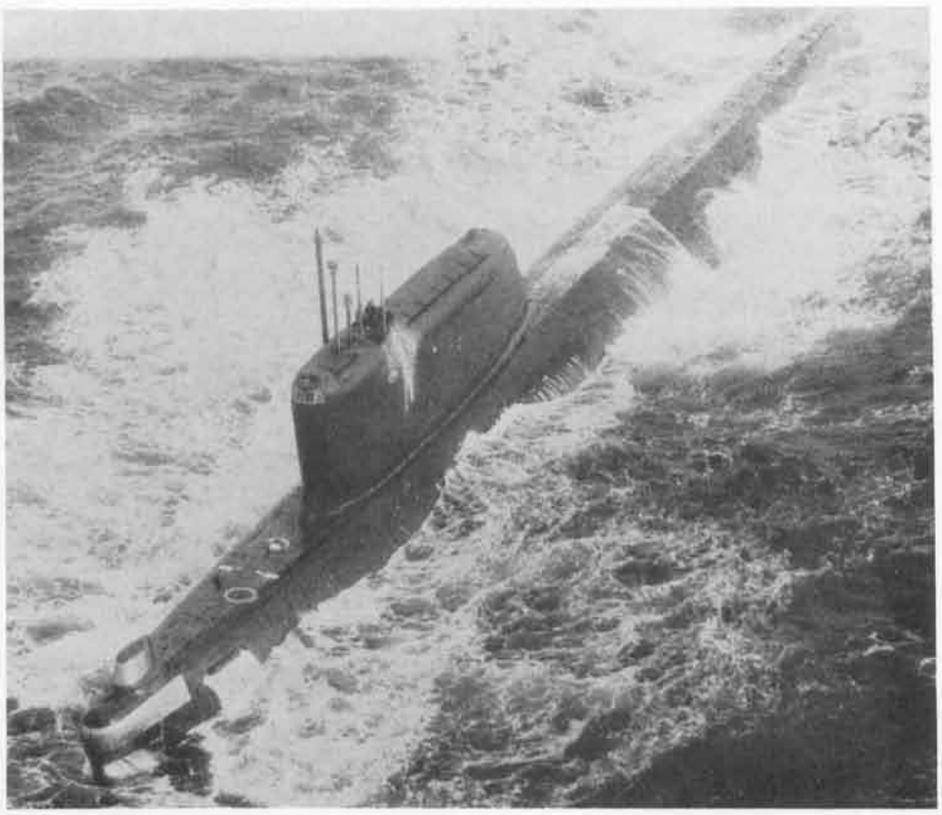
Appearance: Of similar hull form to the "November" and "Echo I" classes although the huge fin is distinctive.

Navigation: There has been no evidence that these submarines are fitted with an inertial navigation system.

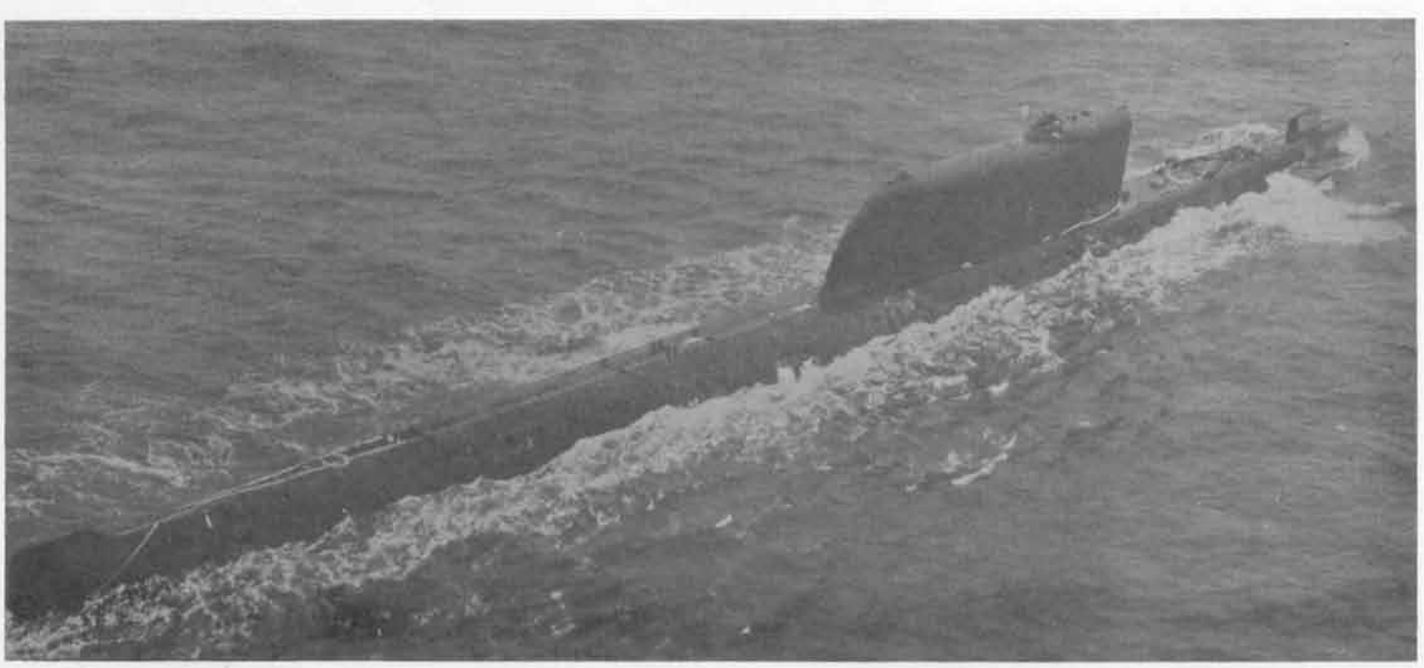
Radar: One Snoop Tray.

Sonar: One Hercules; one Feniks.

"HOTEL II" Class



"HOTEL II" Class damaged in North Atlantic *2/1972, USN*



"HOTEL II" Class *1978*

3 "GOLF I", 13 "GOLF II", 1 "GOLF III", 1 "GOLF IV" and 1 "GOLF V" CLASSES (BALLISTIC MISSILE SUBMARINES SSB)

Displacement, tons: 2 350 surfaced; 2 850 dived ("Golf I"); 2 300 surfaced; 2 800 dived ("Golf II")
Dimensions, feet (metres): 321·4 × 27·9 × 21 *(98 × 8·5 × 6·4)*
Missiles: 3—SS-N-4 (G I); 3—SS-N-5 (G II)
Torpedo tubes: 6—21 in (bow); 12 torpedoes carried
Main machinery: Diesel-electric; 3 diesels; 3 shafts; 6 000 hp; electric motors; 12 000 hp
Speed, knots: 17 surfaced; 14 dived
Range, miles: 22 700 surfaced cruising
Complement: 87 (12 officers, 75 men)

This class has a very large fin fitted with three vertically mounted tubes and hatches for launching ballistic missiles. Built at Komsomolsk and Severodvinsk. Building started in 1958 and finished in 1961-62. After the missile conversion of the "Hotel" class was completed in 1967 thirteen of this class ("Golf II") were converted to carry the SS-N-5 system with 700 n. miles Serb missiles in place of the shorter range (350 n. miles) Sarks. This range of SS-N-5 has now been increased to 900 n. miles. One sank in the Pacific in 1968 and was partially raised by the USA in 1974.
One of this class has been built by China, although apparently lacking missiles.

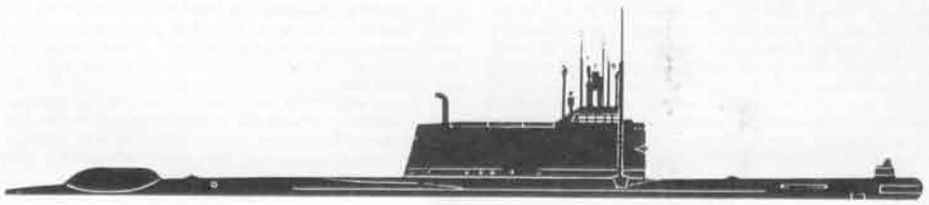
Class: One "Golf I" modified to launch SS-N-8 missiles ("Golf III"), one "Golf I" modified for SS-N-6 missiles ("Golf IV") and one modified for test-firing of new type of ballistic missile ("Golf V"). The remaining "Golf I" may have had their missiles removed to serve as SS ("Modified Golf I").

Deployment: Six "Golf II" deployed in the Baltic since August-October 1976, the first SSBs to enter that sea.
Remainder in the Pacific—all apparently as theatre nuclear forces.

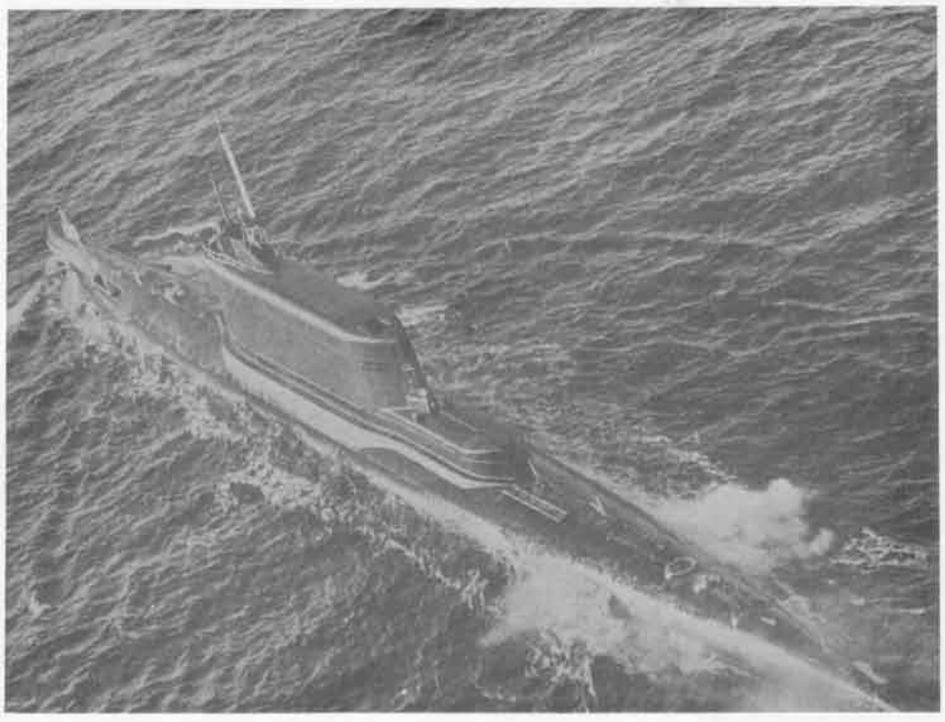
SALT I: The "Golf" class hulls are not included in the SALT I totals. However if new missiles are embarked these are to be counted in the overall missile total eg those in Golf III and IV.

Radar: One Snoop Tray or Snoop Plate.

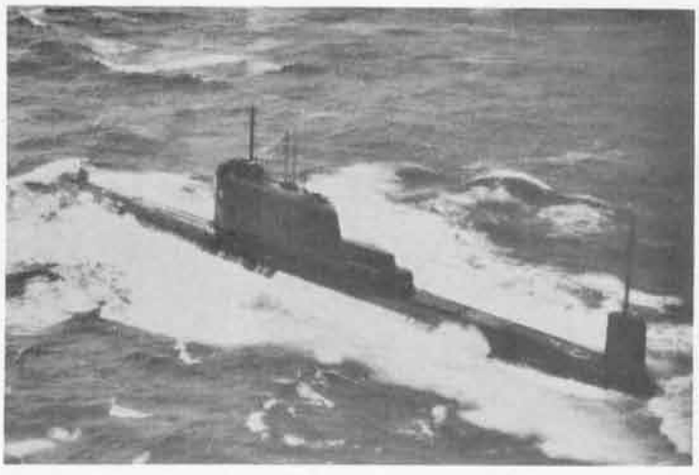
Sonar: Hercules and Feniks.



"GOLF II" Class



"GOLF II" Class (with VLF buoy abaft fin) *1978*



"MODIFIED GOLF I" Class (with four folding HF masts and other aerials—missiles removed) *11/1978, MOD*

"GOLF II" Class (with stern VLF buoy) *9/1977, MOD*

"GOLF II" Class *1978*

Cruise Missile Classes

Note: The first operational appearance of cruise missiles at sea in Soviet submarines was in the Twin-Cylinder variant of the "Whiskey" class in 1958-60. These carried two SS-N-3 missiles with a maximum range of 400 miles against shore targets. A capability against ships appears doubtful in view of the targetting problems. The fact that the US Navy had carried out trials with Loon missiles in the submarines *Cusk* and *Carbonero* in 1948-49 and soon afterwards converted several submarines, some to fire and some to guide the 80 ft Regulus cruise-missile, shows that at this stage the Soviet navy had lagged far behind. In fact in the Fiscal Year 1956 programme the US Navy included the first nuclear-propelled cruise missile submarine *Halibut*, designed to carry five 560 mile Regulus I missiles. By 1965 the cruise-missile programme had been abandoned by the US Navy. Meanwhile the Soviet Navy had gone ahead with the production of the first nuclear-propelled cruise-missile submarine ("Echo I") in the early 1960s with six SS-N-3, again for use against shore targets. With the advent of the "Yankee" class in the late 1970s the "Echo I" class had its missiles removed and was converted to an SSN in the early 1970s. The "Echo I" was followed very closely by the "Echo II" nuclears and the conventional "Juliett" class which were building over the same period armed with eight and four SS-N-3 missiles respectively as a counter to the threat of the US carriers with their nuclear strike capability. By 1968 both production lines had stopped when the first "Charlie" class appeared with underwater launch capability for its 35 mile SS-N-7 missiles. The problem which had faced all the earlier boats, that of having to surface to launch, had been overcome. An improved design of "Charlie I" ("Charlie II") and the single unit of the "Papa" class appeared in the early 1970s, to be followed by the giant "Oscar" in 1980.

1 + ? "OSCAR" CLASS (CRUISE MISSILE SUBMARINES SSGN)

Displacement, tons: 15 000 surfaced; 18 000 full load
Dimensions, feet (metres): 520 × 60 × 36 *(158·5 × 18·3 × 11)*
Missiles: 24 tubes for SS-N-19
Torpedo tubes: 8—21 in *(533 mm)* (24 reloads)
Main machinery: ? 2 nuclear reactors; 2 steam turbines; 120 000 shp
Speed, knots: ? 30
Complement: ? 130

Launched at Severodvinsk in spring 1980 for trials 1981. The missile tubes are carried in the casing, resulting in an unusually large beam. This could, if reflected in the pressure hull diameter, allow for two reactors which, in turn, could provide the power for at least 30 knots. With this speed and a formidable armament this class could well operate on the bow of a task group.

Protection: The position of the missile tubes would provide a gap of 6·7 ft between the outer and inner hulls.

"OSCAR" Class

1 "PAPA" CLASS (CRUISE MISSILE SUBMARINES SSGN)

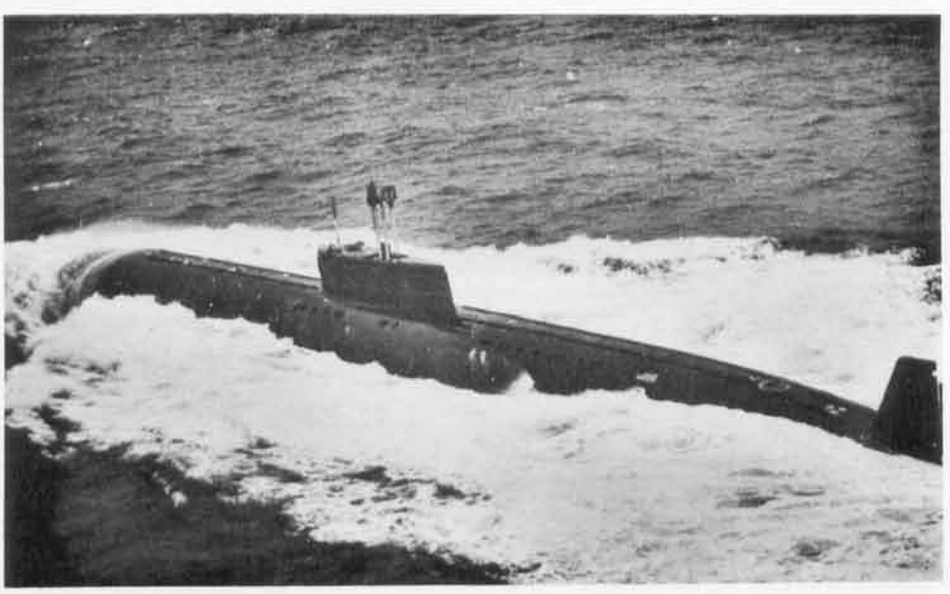
Displacement, tons (approx): 5 500 surfaced; 6 500 dived
Dimensions, feet (metres): 357·5 × 37·7 × 24·9 *(109 × 11·5 × 7·6)*
Missiles: 10 tubes (see note)
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Main machinery: 1 nuclear reactor; 2 steam turbines; 2 shafts; 39 000 shp
Speed, knots: 30 dived
Complement: 90

A single member of an SSGN class apparently a development of the "Charlie" class built at Gorki 1969-71. The fin is of a much more angular shape than the "Charlie" classes with a higher casing, a more rounded bow and with the missile tubes having square covers. Whether the missiles are SS-N-9 is uncertain although this appears likely and "Papa" could have been the trials vehicle for the "Oscar" class.

Radar: One Snoop Tray.
ECM: Stop Light.

Sonar: One MF/LF.

Torpedoes: May carry SS-N-15.



"PAPA" Class

5 + ? "CHARLIE II" CLASS (CRUISE MISSILE SUBMARINES SSGN)

Displacement, tons: 4 400 surfaced; 5 500 dived
Dimensions, feet (metres): 337·5 × 32·5 × 25·6 *(102·9 × 9·9 × 7·8)*
Missiles: 8 tubes for SS-N-7
Torpedo tubes: 6—21 in *(533 mm)* (see note)
Main machinery: 1 nuclear reactor; 2 steam turbines; 30 000 shp; 1 shaft
Speed, knots: 28 dived
Complement: 90

Enlarged "Charlie" class. First laid down at Gorki in 1972, second in 1973, third in 1975, fourth in 1977 and fifth in 1979. Construction continues slowly.
The increase in size may be due to the fitting of equipment for firing the SS-N-15, a Subroc-type weapon, from her torpedo tubes.

"CHARLIE II" Class

Missiles: Reported that some may carry SS-N-9 missiles with a 70 mile range in place of SS-N-7.

Radar: One Snoop Tray.
ECM: One Stop Light.

Sonar: One LF array.

"CHARLIE II" Class

1979

16 "JULIETT" CLASS (CRUISE MISSILE SUBMARINES SSG)

Displacement, tons: 3 000 surfaced; 3 700 dived
Dimensions, feet (metres): 284·4 × 33·1 × 22·9 *(86·7 × 10·1 × 7)*
Missiles: 4 tubes for SS-N-3A; 2 before and 2 abaft the fin
Torpedo tubes: 6—21 in *(533 mm)* (bow); 18 torpedoes carried
Main machinery: Diesel-electric; 3 diesels; 7 000 bhp; 3 electric motors; 5 000 hp; 2 shafts
Speed, knots: 19 surfaced; 17 dived
Range, miles: 15 000 surfaced cruising
Complement: 79

"JULIETT" Class

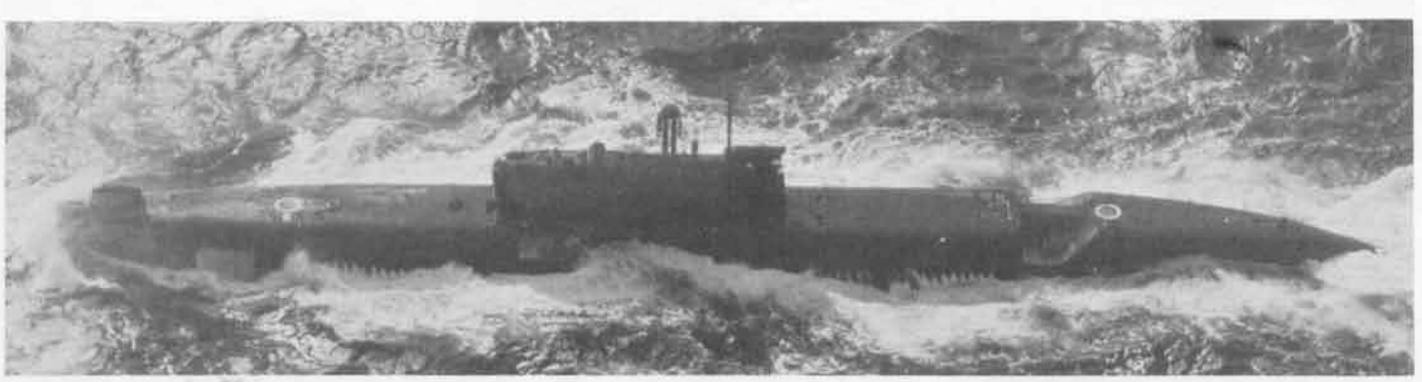
Completed between 1962 and 1967 at Leningrad. Four SS-N-3A launchers, one pair either end of the fin which appears to be comparatively low. This class was the logical continuation of the "Whiskey" class conversions. A number of this class has in the past been deployed to the Mediterranean and Indian Ocean.

Appearance: The massive casing and the long, fairly low fin make this an unmistakable class.

Radar: Mid-course guidance for SS-N-3A; Front Piece and Front Door.
Search/navigation: One Snoop Slab.
ECM: Stop Light.

Sonar: One Hercules; one Feniks.

"JULIETT" Class (with modified side to fin) *7/1979*



"JULIETT" Class *1973, MOD(N)*

"JULIETT" Class *1978*

Fleet Submarine Classes

Note: The use of nuclear power for marine propulsion was developed from 1950 onwards, the first submarine reactor being put in hand in 1953 probably about the same time as a larger reactor for the icebreaker *Lenin* was under construction. The latter commissioned in September 1959, a year after the first of the "November" class entered service. These submarines, of which 14 were built in about five years had a very long hull, and this long form was also used in the "Hotel" and "Echo I" designs. It was a new concept designed to take full advantage of the available horse-power and, in the "November" class, was fitted with a small streamlined fin. Apparently no prototype was produced before series production of the "November" class began and this was also true for the "Victor" class which followed after a five year pause. Since the early "November" class provided sea-experience of this new form of submarine some five years of redesign was therefore available before the first "Victor" was laid down. The ability to produce hydrodynamically advanced hull forms was further proved by the efficiency of the "Victor" and her near sister the "Charlie". Five years after the first "Victor" came the "Victor II", an enlarged edition whose increase in size may be due to the fitting of the new tube-launched weapon system, SS-N-15, probably similar to the Subroc of the US Navy. This again was followed five years later by the "Victor III", slightly longer than the "Victor II".
The "Alfa" class now entering service is a new concept of attack submarine with a length/beam ratio very different from its predecessors, much improved propulsion plant and a very deep diving depth.

4 + 1 "ALFA" CLASS (FLEET SUBMARINES SSN)

Displacement, tons: 3 500 surfaced; 4 200 dived
Dimensions, feet (metres): 260·1 × 32·8 × 24·9 *(79·3 × 10 × 7·6)*
Torpedo tubes: 6—21 in *(533 mm)* (for wire-guided torpedoes)
Main machinery: 1 nuclear reactor; steam turbine; 24 000 shp; 1 shaft; auxiliary diesel
Speed, knots: 42 dived
Complement: 60

"ALFA" Class

The first of this class was laid down in 1968 and completed in 1970 at Sudomekh, Leningrad. The building time was very long in comparison with normal programmes and it seems most likely that this was a prototype. This boat was scrapped in 1974. The reduction of the length combined with the high speed shows that a new type of reactor has been developed. A greater diving depth, possibly over 3 000 ft *(914 m)*, has been achieved by use of titanium alloy for the hull. The second of the class was laid down in 1971, the third in 1976 and fourth in 1977. Now in slow series production.

Sonar: LF bow array.

Torpedoes: May be fitted for SS-N-15.

"ALFA" Class *1979*

5 "YANKEE" CLASS (? FLEET SUBMARINES SSN)

Ballistic missile submarines (SSBN) with missile tube section removed possibly for conversion to SSN. For details see SSBN section; (the removal of the missile section will reduce the length by about 95 ft).

5 + 3 "VICTOR III" CLASS (FLEET SUBMARINES SSN)

Displacement, tons: 4 900 surfaced; 6 200 dived (approx)
Dimensions, feet (metres): 334·6 × 32·8 × 22·3 *(102 × 10 × 6·8)*
Torpedoes: 6—21 in *(533 mm)*; 18 torpedoes carried (see note)
Main machinery: 1 nuclear reactor; 2 steam turbines; 30 000 shp; 1 shaft
Complement: 90?

"VICTOR III" Class

An improvement on "Victor II" the first of class being completed at Severodvinsk in 1979. Since then this has been a very rapid building programme in place of "Victor II" building. Has a chamber mounted on the after stabiliser fin.

Communications: VLF buoy and ELF floating aerial.

Radar: Snoop Tray.

Sonar: One LF array.

Torpedoes: May be fitted for SS-N-15.

7 "VICTOR II" CLASS (FLEET SUBMARINES SSN)

Displacement, tons: 4 600 surfaced; 5 680 dived
Dimensions, feet (metres): 323·1 × 32·8 × 22·3 *(98·5 × 10 × 6·8)*
Torpedo tubes: 6—21 in *(533 mm)* (bow) (see note)
Main machinery: 1 nuclear reactor; 2 steam turbines; 1 shaft; 30 000 shp
Speed, knots: 31 dived
Complement: 90

"VICTOR II" Class

An enlarged "Victor" design 4·6 metres longer. This additional length may be used to house the equipment needed for firing the tube-launched SS-N-15, a Subroc type weapon. First appeared in 1972. All built at Admiralty Yard, Leningrad.

Communications: VLF buoy and ELF floating aerial. VHF and UHF aerials.

Radar: One Snoop Tray.

Sonar: One LF array.

"VICTOR II" Class *1978*

16 "VICTOR I" CLASS (FLEET SUBMARINES SSN)

Displacement, tons: 4 300 surfaced; 5 100 dived
Dimensions, feet (metres): 307·7 × 32·8 × 23·9
(93·9 × 10 × 7·3)
Torpedo tubes: 6—21 in *(533 mm)* (bow) 24 torpedoes carried
Main machinery: 1 nuclear reactor; 2 steam turbines; 30 000 shp; 1 shaft
Speed, knots: 32 dived
Complement: 90

"VICTOR I" Class

Designed purely as an attack submarine for both A/S and anti-ship roles. The first of class laid down in 1965 entering service in 1967-68. Subsequent building rate of about two per year, which was superseded by the "Victor II" programme. Built at Admiralty Yard, Leningrad and Gorki.

This was the first Soviet submarine with an Albacore hull-form and a new reactor system, a new generation design shared by the "Charlie" class.

The majority is deployed with the Northern Fleet, although some have joined the Pacific Fleet.
Radar: One Snoop Tray.

"VICTOR I" Class *1979*

5 "ECHO I" CLASS (FLEET SUBMARINES SSN)

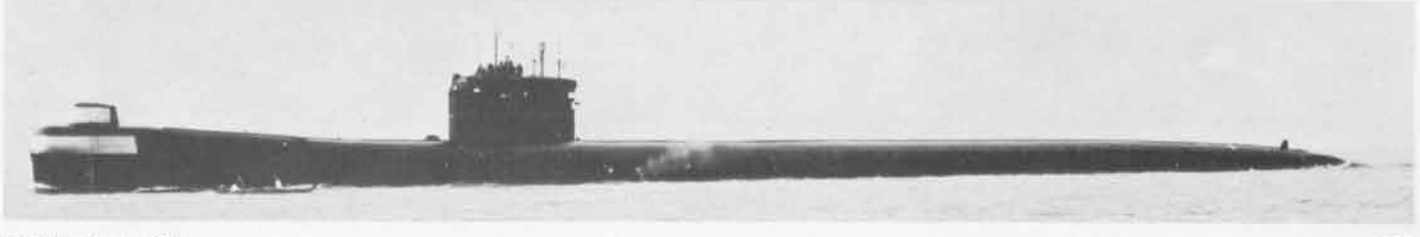
Displacement, tons: 4 300 surfaced; 5 200 dived
Dimensions, feet (metres): 379·8 × 29·8 × 23·9
(115·8 × 9·1 × 7·3)
Torpedo tubes: 6—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern) (20 torpedoes carried)
Mines: Can lay 40 mines in place of torpedoes
Main machinery: 1 nuclear reactor; 2 steam turbines; 30 000 shp; 1 shaft
Speed, knots: 28 dived
Complement: 92 (12 officers, 80 men)

"ECHO I" Class

This class was completed in 1960-62 at Komsomolsk. Originally mounted six SS-N-3 launchers raised from the after casing.
The hull of this class is very similar to the "Hotel"/"November" type and it is probably powered by similar nuclear plant. Only five "Echo I" class were built, being followed immediately by the "Echo II" class. In 1971-74 the "Echo I" class was converted into fleet submarines with the removal of the missile system, a decision which may have been due to the development of the "Yankee" class with its strategic missile system.

Radar: One Snoop Tray.
ECM: One Stop Light.

Sonar: Hercules and Feniks.



"ECHO I" Class (as SSN) *1978*

13 "NOVEMBER" CLASS (FLEET SUBMARINES SSN)

Displacement, tons: 4 200 surfaced; 5 000 dived
Dimensions, feet (metres): 359·8 × 29·8 × 21·9
(109·7 × 9·1 × 6·7)
Torpedo tubes: 8—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); 26 torpedoes carried
Main machinery: 1 nuclear reactor; 2 steam turbines; 2 shafts; 30 000 shp
Speed, knots: 30 dived
Complement: 86

"NOVEMBER" Class

The first class of Soviet nuclear submarines which entered service between 1958 and 1963. Built at Severodvinsk. The hull form with the great number of free-flood holes in the casing suggests a noisy boat. In April 1970 one of this class sank south-west of the UK. One in reserve.
Diving depth: Reported as 1 650 ft *(500 m)*.

Radar: One Snoop Tray.
ECM: One Stop Light.
Sonar: Hercules and Feniks.

"NOVEMBER" Class *1978*

Patrol Submarine Classes

(see "Golf" class)

Note: When the time came to rebuild the Soviet navy after the Revolution the first major new construction programme was that for submarines. By 1939 this force numbered 185 and by the start of the Great Patriotic War in June 1941, 218 were listed. At the end of the war new German ideas became available to the USSR—new designs, new concepts. This new knowledge was incorporated in a 1948 plan to build 1 200 submarines between 1950 and 1965 at an initial rate of 78 a year, increasing to 100. This programme was probably split into three sections, representing the three zones of defence—200 long-range boats ("Zulu" and, later, "Foxtrot" classes), 900 medium-range boats, ("Whiskey" and, later, "Romeo" classes) and 100 coastal boats of the "Quebec" class, the last being fitted with either Walther turbines or closed-cycle diesels. These last were German designs as were the hull-forms of the submarines, being similar to the German Type XXI.

This plan was largely amended with the post-Stalin readjustments and the successful experiments with nuclear power plants. Of the projected boats only 28 out of 40 "Zulu" class were built, 60 out of 160 "Foxtrot" class, 240 out of 340 "Whiskey" class (albeit in seven years), 20 out of 560 "Romeo" class and 40 out of 100 "Quebec" class. After the arrival of the nuclears, diesel submarine design has concentrated since the early 1960s on long-range attack types with the exception of the "Golf" class SSBs and the "Juliett" class SSGs. The "Foxtrot" class was built from 1958-71 with 62 completed, production still continuing for client countries. In 1972 came the "Tango" class, still being produced at the rate of two to three per year. Non-nuclear submarine construction will probably continue in view of the high quality listening capabilities of these boats. In addition certain specialised submarines have been built—the four "Bravo" class target boats in the late 1960s, the "India" class rescue submarine and the "Lima" research submarines in the late 1970s.

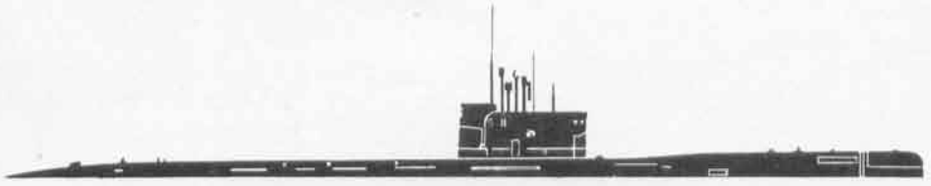
15 + 1 "TANGO" CLASS (PATROL SUBMARINES SS)

Displacement, tons: 3 000 surfaced; 3 700 dived
Dimensions, feet (metres): 301·8 × 29·5 × 23 *(92 × 9 × 7)*
Torpedo tubes: 8—21 in *(533 mm)* (see note)
Main machinery: 3 diesels; 6 000 shp; 3 electric motors; 6 000 shp; 3 shafts
Speed, knots: 20 surfaced; 16 dived
Complement: 62

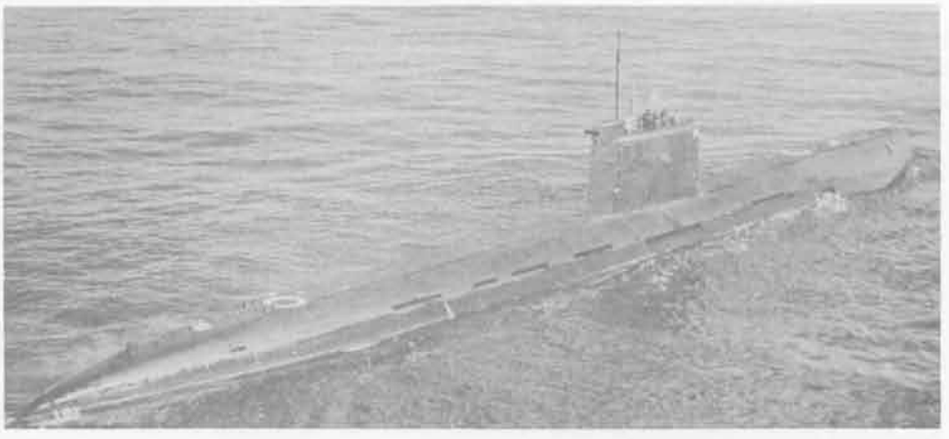
This class was first seen at the Sevastopol Review in July 1973 and, immediately succeeding the "Foxtrot" class in 1972, shows a continuing commitment to non-nuclear-propelled boats. As this is clearly an advanced design it may be intended to cover the large shallow-water areas around the USSR where nuclear submarines would be less efficiently deployed and to exploit the quiet listening platform provided by this type of submarine. Continuing programme of two to three a year at Gorki.

Radar: One Snoop Tray.

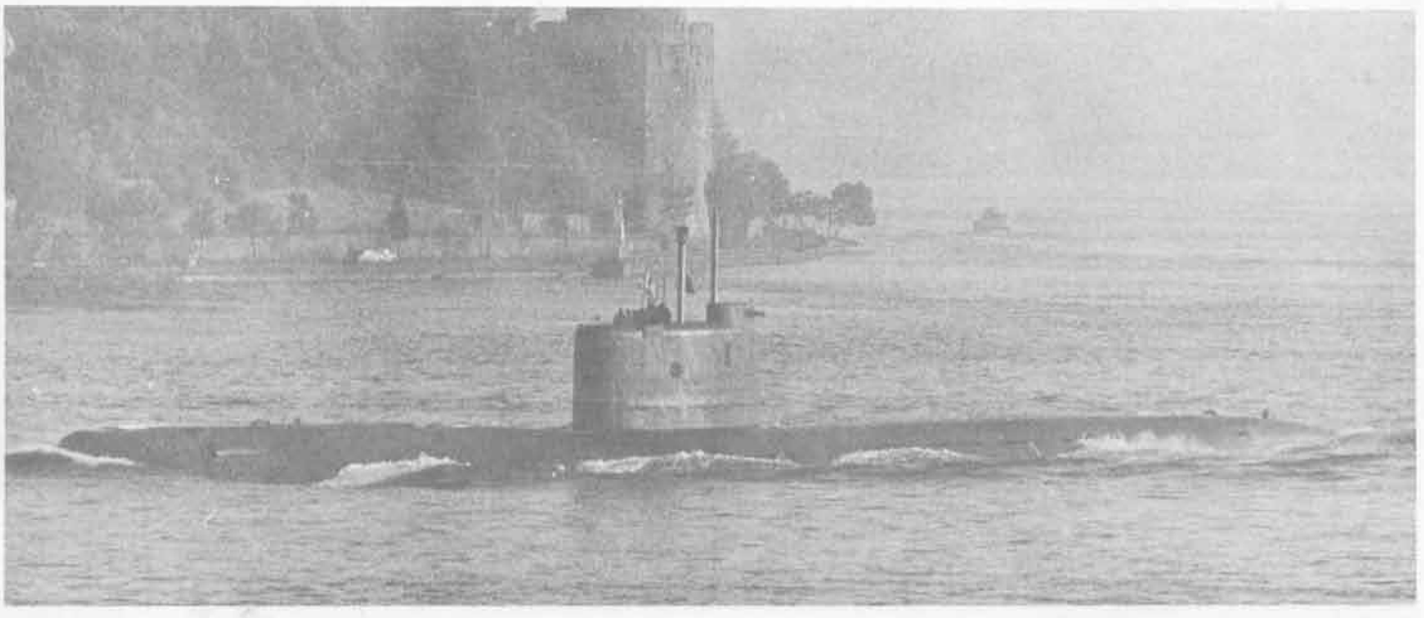
Weapons: These submarines may be able to launch the SS-N-15 (Subroc type) weapon.



"TANGO" Class



"TANGO" Class *1978*

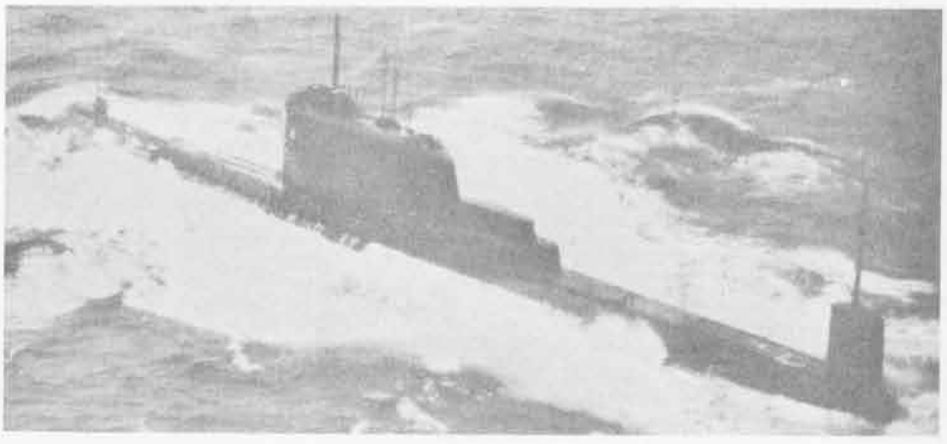


"TANGO" Class *1978, Selçuk Emre*

"TANGO" Class *1976*

1 + ? "MODIFIED GOLF I" CLASS (PATROL SUBMARINE SS)

Characteristics as for "Golf I" class in Ballistic Missile Submarines section but with the missile tubes removed.



"MODIFIED GOLF I" Class (with four folding HF masts and other aerials—missiles removed) *11/1978, MOD*

60 "FOXTROT" CLASS (PATROL SUBMARINES SS)

Displacement, tons: 1 950 surfaced; 2 500 dived
Dimensions, feet (metres): 300·1 × 26·2 × 20 *(91·5 × 8 × 6·1)*
Torpedo tubes: 6—21 in *(533 mm)* (bow);
4—16 in *(406 mm)* (stern); 22 torpedoes carried
Main machinery: Diesel-electric; 3 diesels; 6 000 bhp;
3 electric motors; 6 000 hp; 3 shafts
Speed, knots: 18 surfaced; 16 dived
Range: 20 000 miles surfaced, cruising
Complement: 75

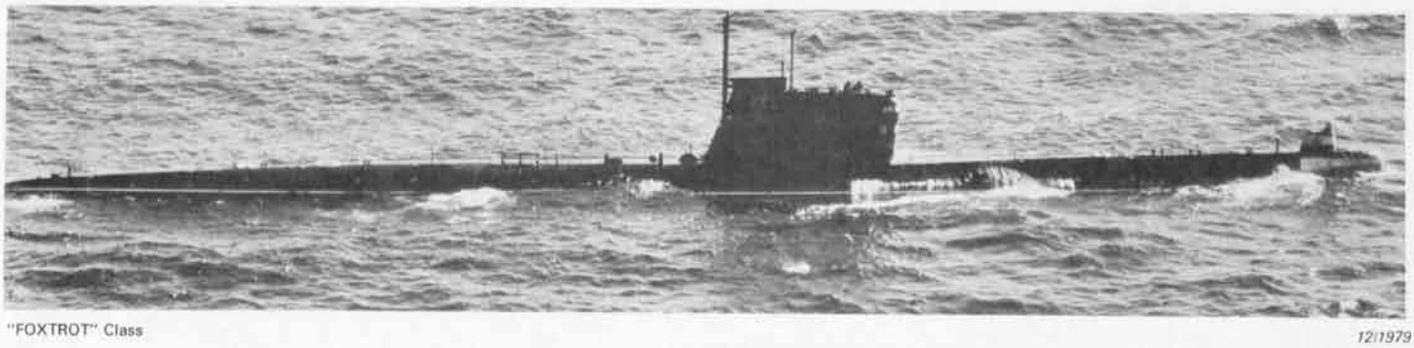
"FOXTROT" Class

Built between 1958 and 1971 at Sudomekh for the Soviet navy. Production continues for transfer to other countries eg Cuba, India, Libya. A follow-on of the "Zulu" class with similar propulsion to the "Golf" class. Only 62 out of a total programme of 160 were completed as the change over to nuclear boats took effect. A most successful class which has been deployed world-wide, forming the bulk of the Soviet submarine force in the Mediterranean. Two boats believed to have been scrapped following accidents.

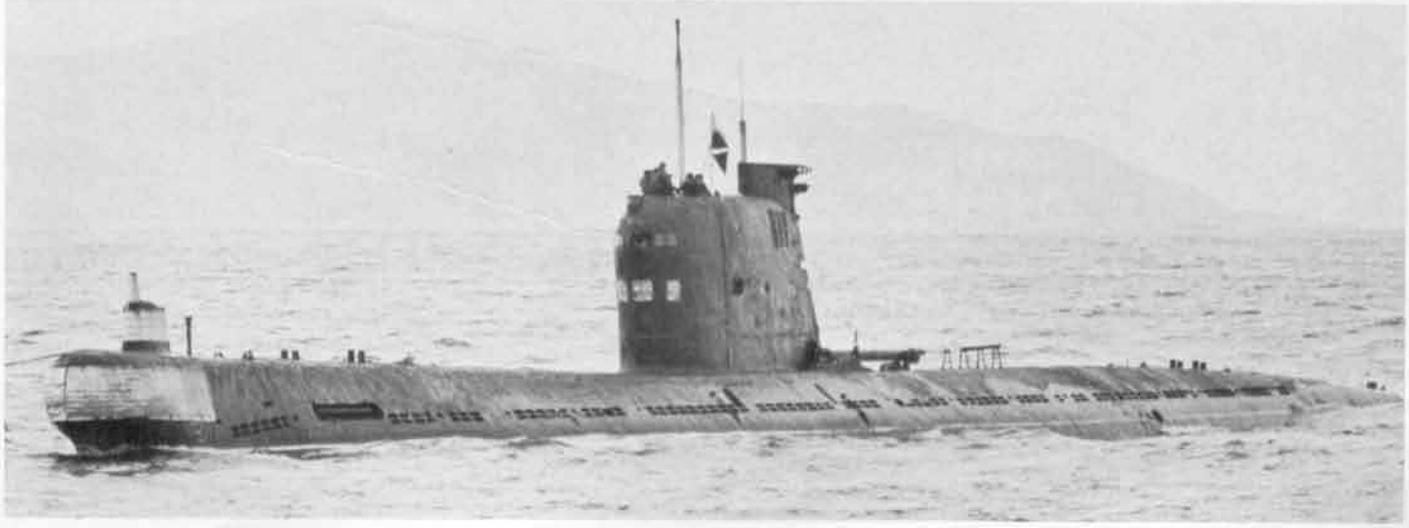
Radar: One Snoop Tray.
ECM: One Stop Light.

Sonar: Hercules and Feniks.

Transfers: All new construction: Cuba: One 7 February 1979 and one March 1980. India: One in April 1968, one in January 1969, two end 1970, two in September 1973, one in December 1973 and one in February 1975. Libya: Three in 1976-78.



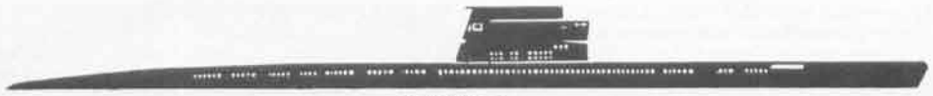
"FOXTROT" Class *12/1979*



"FOXTROT" Class *1979*

12 + 7 (Reserve) "ZULU IV" CLASS (PATROL SUBMARINES SS)

Displacement, tons: 1 950 surfaced; 2 300 dived
Dimensions, feet (metres): 295·2 × 24·3 × 20 *(90 × 7·4 × 6·1)*
Torpedo tubes: 10—21 in *(533 mm)* (6 bow, 4 stern);
(24 torpedoes carried or 40 mines and 4 torpedoes)
Main machinery: 3 diesels; 10 000 bhp;
3 electric motors; 4 050 hp; 3 shafts;
Speed, knots: 18 surfaced; 16 dived
Range, miles: 20 000 surfaced, cruising
Complement: 75



"ZULU IV" Class

The first large post-war patrol submarines built by USSR. 28 completed from late 1951 to 1955 out of an original programme of 40. General appearance is streamlined with a complete row of free-flood holes along the casing. Eighteen were built by Sudomekh Shipyard, Leningrad, in 1952-55 and others at Severodvinsk. The general external similarity to the later German U-boats of World War II is notable. All now appear to be of the "Zulu IV" type. This class is obsolescent and will soon be disposed of.
The six "Zulu V" conversions of this class provided the first Soviet ballistic missile submarines with SS-N-4 systems, the first being completed in 1955. The majority of these conversions no longer have a missile capability and have either been scrapped or are used in an auxiliary role such as oceanographic research.

"ZULU IV" Class *1978*

Radar: One Snoop Plate or Snoop Tray.

Sonar: Tamir.

"ZULU IV" Class *1977, Selçuk Emre*

12 "ROMEO" CLASS (PATROL SUBMARINES SS)

Displacement, tons: 1 400 surfaced; 1 800 dived
Dimensions, feet (metres): 251·9 × 23·9 × 18 *(76·8 × 7·3 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)* (6 bow, 2 stern);
18 torpedoes or 36 mines in place of torpedoes
Main machinery: 2 diesels; 4 000 bhp;
2 electric motors; 4 000 hp; 2 shafts
Speed, knots: 17 surfaced; 14 dived
Range, miles: 16 000 at 10 knots (surfaced)
Complement: 54

"ROMEO" Class

These are an improved "Whiskey" class design with modernised conning tower, and sonar installation. All built in 1958-61 at Gorky. This was to have been numerically the largest class in the post-war submarine build-up. As their construction period coincided with the successful introduction of nuclear propulsion only about 20 were completed out of the staggering planned total of 560. One of this class is used for experimental work.

Radar: One Snoop Plate.
ECM: Stop Light.

Sonar: Hercules and Feniks.

Transfers: Six to Egypt in 1966-68. Two to Bulgaria in early 1970s. China and North Korea building submarines of similar design.

"ROMEO" Class *1974*

"ROMEO" Class *1970*

50 + 100 (Reserve) "WHISKEY" CLASS (PATROL SUBMARINES SS)

Displacement, tons: 1 080 surfaced; 1 350 dived
Dimensions, feet (metres): 249·3 × 21·3 × 16·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* (bow); 2—16 in *(406 mm)* (stern); 14 torpedoes carried (or 28 mines)
Main machinery: Diesel-electric; 2 shafts
2 diesels; 4 000 bhp
2 electric motors; 2 700 hp
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots (surfaced)
Complement: 54

This was the first post-war Soviet design for a medium-range submarine. Like its larger contemporary the "Zulu", this class shows considerable German influence. About 240 of the "Whiskey" class were built between 1951 and 1957 at Gorki, Komsomolsk, Leningrad (Baltic Yard) and Nikolaev. Like its successor, the "Romeo", this class was cut back from the original planned total of 340 as nuclear propulsion became established. Built in five types—I and IV had guns forward of the conning tower, II had guns both ends, whilst III and V have no guns. All Soviet "Whiskey" class are now Type V.

Class total: There may be about 50 operational although this class is rarely seen out of area.

Conversions: Two of this class, named *Severyanka* and *Slavyanka*, were converted for oceanographic and fishery research and have probably now been scrapped.

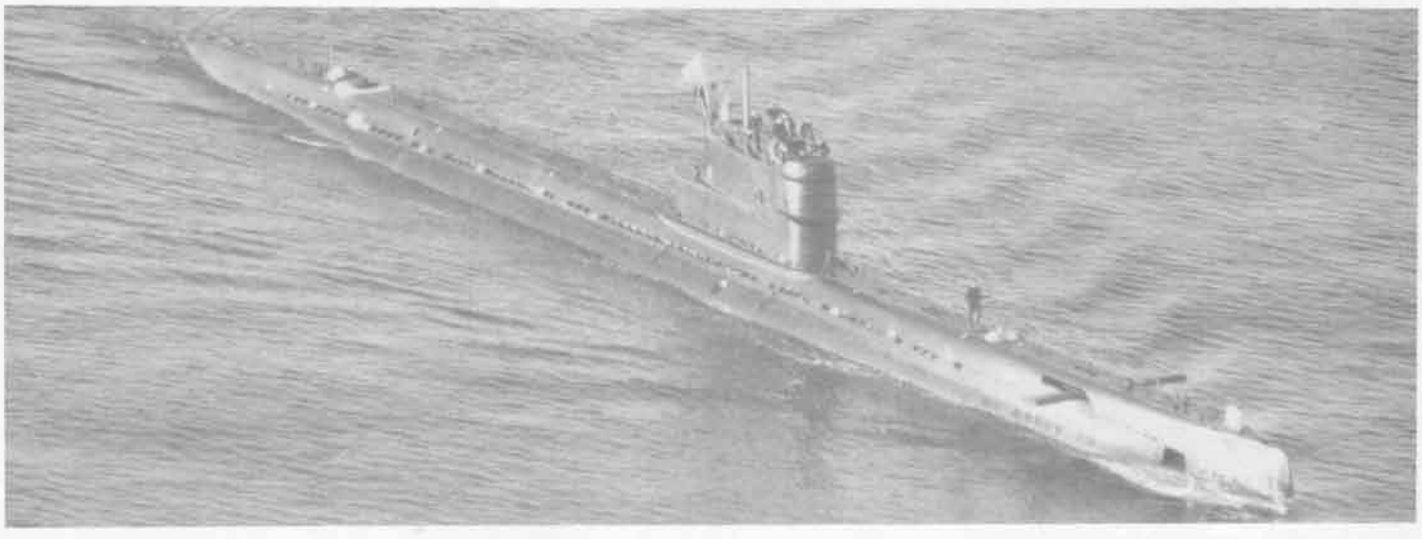
Foreign transfers: Has been the most popular export model, with about 40 in all transferred. Currently in service:—Albania (3), Bulgaria (2), Cuba (1), Egypt (6), Indonesia (2), North Korea (4), Poland (4). China has carried out her own building programme.

Radar: One Snoop Plate.
ECM: One Stop Light.

Sonar: Tamir.

"WHISKEY V" Class

"WHISKEY V" Class *1979*

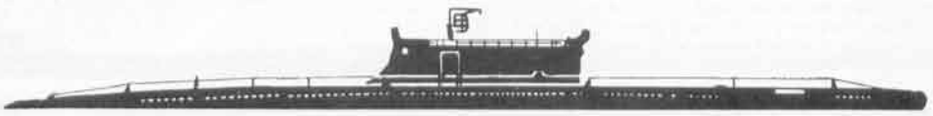


"WHISKEY V" Class *9/1977, MOD*

"WHISKEY V" Class *1978*

2 "WHISKEY CANVAS BAG" CLASS (RADAR PICKET SUBMARINES SSR)

Displacement, tons: 1 050 surfaced; 1 350 dived
Dimensions, feet (metres): 249·3 × 21·3 × 16·1 *(76 × 6·5 × 4·9)*
Torpedo tubes: 4—21 in *(533 mm)* (bow);
2—16 in *(406 mm)* (stern) (14 torpedoes or 28 mines)
Main machinery: Diesel-electric; 2 shafts; 2 diesels; 4 000 bhp; 2 electric motors; 2 700 hp
Speed, knots: 18 surfaced; 14 dived
Range, miles: 13 000 at 8 knots surfaced
Complement: 54



"WHISKEY CANVAS BAG" Class

Basically of same design as the "Whiskey" class but with long-range Boat-Sail radar aerial mounted on the fin. The way in which this was covered prompted the title "Canvas Bag". Four were converted in 1959 to 1963 as surveillance pickets. The introduction of "Bear" aircraft around 1963 probably rendered this plan redundant and thus very few were converted. Some have, however, remained in service so presumably a task has been found for them. One has had her Boat Sail radar replaced by an unidentified aerial and had a large chamber fitted on the after casing.

Radar: Air search: One Boat Sail.
One Snoop Plate.
ECM: One Stop Light.

Sonar: Tamir.

"WHISKEY CANVAS BAG" Class (variant) *1975*

4 + 15 (Reserve) "QUEBEC" CLASS (PATROL SUBMARINES SS)

Displacement, tons: 450 surfaced; 530 dived
Dimensions, feet (metres): 185 × 18 × 13·4 *(56·4 × 5·5 × 4·1)*
Torpedo tubes: 4—21 in *(533 mm)* (bow) (8 torpedoes carried)
Main machinery: Diesel-electric; 3 shafts; 1 diesel; 3 000 bhp; 3 electric motors; 3 500 hp
Speed, knots: 17 surfaced; 16 dived
Oil fuel, tons: 50
Range, miles: 7 000 surfaced cruising
Complement: 40

"QUEBEC" Class

Short range, coastal submarines. Built from 1954 to 1957. Thirteen were constructed in 1955 by Sudomekh Shipyard, Leningrad. The original planned total was cut from 100 to at least 22, overtaken by nuclear propulsion and with the failure of the unconventional propulsion in the earlier boats.

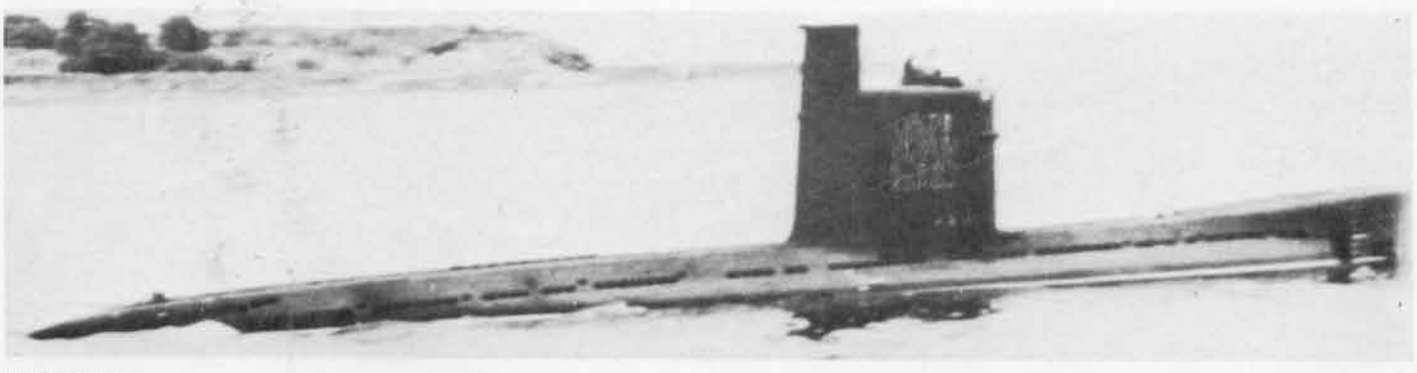
Class total: Four may be still running but most are in reserve and may be deleted in the near future.

Propulsion system: In the late 1930s both closed cycle diesels and a closed cycle turbine were under development in Germany. After initial sea trials both were tried out in the Type XVII and later submarines. Thus when the Soviet Union occupied a large part of Germany at the war's end they had a great deal of knowledge available and experiments continued at Leningrad. The Walter Turbine was certainly put to sea and so were possibly Kreislauf closed cycle diesels using the centre shaft. The fuels required, high test peroxide for the turbines and liquid oxygen for the diesels, was dangerous to handle, frequently causing fires and explosions. Consequently this class reverted to normal diesel and electric propulsion.

Radar: One Snoop Plate.
ECM: One Stop Light.

Sonar: Tamir and Feniks.

"QUEBEC" Class *1970*



"QUEBEC" Class *1970*

1 "LIMA" CLASS (RESEARCH SUBMARINE)

Displacement, tons: 2 450 surfaced
Dimensions, feet (metres): 282·1 × 26·6 × 19·7
(86 × 8·1 × 6) (approx)
Main machinery: Probably diesel-electric

A single boat probably used for hydro-acoustic trials. The bulge at the forward end of the fin is probably sonar-associated—similar to that used for the German Balkon sonar 35 years ago.

"LIMA" Class

1 "INDIA" CLASS (RESCUE SUBMARINE)

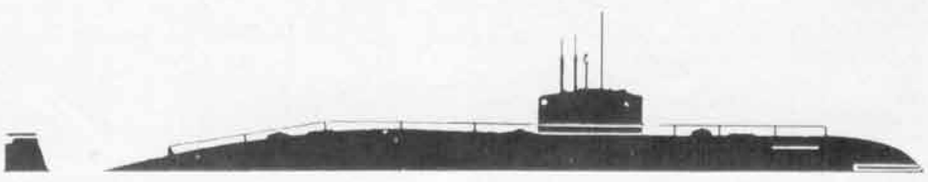
This single diesel submarine is in service in the Pacific. Designed for rescue work, she carries two DSRVs on the after casing.

"INDIA" Class *1980, USN*

4 "BRAVO" CLASS (TARGET SUBMARINES)

Displacement, tons: 2 200 surfaced; 2 700 dived
Dimensions, feet (metres): 229·9 × 32·1 × 23·9
(70·1 × 9·8 × 7·3)
Torpedo tubes: 6—21 in *(533 mm)*
Main machinery: Diesel-electric; 2 diesels; 2 500 hp; 2 electric motors; 2 500 hp
Speed, knots: 14 dived
Complement: 60

The beam-to-length ratio is larger than normal in a diesel submarine which would account in part for the large displacement for a comparatively short hull.
First completed in 1968, possibly at Komsomolsk. These four submarines are spread over the four fleets, reinforcing the view that these are "padded targets" for torpedo and A/S firings.



"BRAVO" Class

"BRAVO" Class *1979*

AIRCRAFT CARRIERS

0+ 1 +? NUCLEAR POWERED (CVN)

Displacement, tons: 75 000 (?)
Main engines: Nuclear propulsion

The building of this ship, a logical continuation of the "Kiev" class and a basic component of a task force including the nuclear-propelled "Kirov" class battle cruisers, was reported as acknowledged by Admiral Gorshkov in 1979. Although some sources suggest Severodvinsk as the building yard this seems unlikely as Nikolayev has the experience gained on the "Kiev" class and winter protection of a ship of this size would be a major project. It seems unlikely that the first of class will be laid down before the launch of the fourth "Kiev" class in late 1981-early 1982.

Aircraft: If the two-seater "Fencer" (Su-24) a variable geometry aircraft first identified in 1974 which can carry 10 000 lbs of weapons as well as a twin 23 mm machine gun, were to be converted for naval service (it being smaller, with less T.O. weight than the American F-111) the Soviet navy would have a deployable naval strike capability of great efficiency and capable of over Mach 2. Another candidate could be a version of the "Flogger" (MiG 23).

3 + 1 "KIEV" CLASS (AIRCRAFT CARRIERS)

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
KIEV	Nikolayev South (Nosenko, 444)	Sep 1970	Dec 1972	May 1975
MINSK	Nikolayev South (Nosenko, 444)	Dec 1972	Aug 1975	Feb 1978
NOVOROSSIISK	Nikolayev South (Nosenko, 444)	Sep 1975	Dec 1978	1981
—	Nikolayev South (Nosenko, 444)	Dec 1978	late 1981	1983-4

Displacement, tons: 36 000 standard; 42 000 full load
Dimensions, feet (metres): 898·7 × 135 (hull) × 32·8 *(274 × 41·2 × 10)*
Beam, feet (metres): 164 *(50)* (oa, including flight deck and sponsons)
Aircraft (estimated): 32—normal mix, 12 Forger A, 1 Forger B, 16 Hormone A, 3 Hormone B
Missiles: SSM: 4 twin SS-N-12 (16 reloads)
SAM: 2 twin SA-N-3; 2 twin SA-N-4
Guns: 4—76 mm (twins); 8 Gatling 30 mm mounts
A/S weapons: 1 twin SUW-N-1 (for FRAS-1);
2—12-barrelled MBU 6000 launchers fwd
Torpedo tubes: 10—21 in *(533 mm)*
Main engines: 4 steam turbines; 4 shafts (2 rudders); 180 000 shp
Speed, knots: 32
Range, miles: 13 000 at 18 knots; 4 000 at 30 knots
Complement: 2 500 (including air group)

"KIEV" Class

The first post-war sign of Soviet acceptance of the need for organic air was the appearance of *Moskva* and *Leningrad* in 1968-69. They carried the embarked helicopter concept a long stage further than the cruisers with a single embarked helicopter. It is most probable that a much larger number of ships was projected and the reason for the cancellation of the remainder might be because of any or all of a number of factors. Two appear to be of considerable importance—the growing Soviet realisation of the important part their navy could play in overseas affairs and the appearance of the prototype of the first Soviet VTOL aircraft, the Yakovlev Freehand. This first appeared in public in 1967 and its capabilities were known at least a year before that. This was ten years before *Kiev* became operational, *(Kiev* passed the Turkish Straits on 18 July 1976) a reasonable lead time for Soviet designers and constructors.
The task of this class is probably twofold—an advanced ASW role in wartime and an intervention capability in so-called peacetime with excellent command, control and communication capabilities. The inclusion of SS-N-12 (300 n. mile) capability, A/S weapons as well as sonar equipment, and a gun armament as well as both SAM and Point Defence Systems shows a continuation of the Soviet plan for multi-purpose ships.
These are probably all that will be built to this design although a follow-on class of conventionally propelled carriers cannot be ruled out.

MINSK *1979, MOD*

Aircraft: The complement is a mix of Hormone helicopters and Forger (Yak 36) VTOL aircraft. The Forger comes in two versions—A, a single seater of which about a dozen were embarked in *Kiev* in July-August 1976 and B, a twin-seat trainer of which only one was seen. Some 20 Hormones, mostly A but with one or two B, were also carried on the same trip.
The functions of the Forger have not been fully revealed and may not yet, in fact, be fully evaluated. It appears to have the potential to carry both air-to-air and air-to-surface missiles as well as A/S weapons. All this, combined with a reconnaissance role, means that a new dimension in Soviet capability has been achieved.
The Hormone A is primarily an A/S aircraft while Hormone B is used for target acquisition for SS-N-12.

ECM: A full fit is carried including eight Side Globe housings, four Top Hat A, four Top Hat B, two Rum Tub, two Bell Clout, two Cage Pot.

Flight deck: 620 ft *(189 m)* long with a 4½ degree angle, 68 ft *(20·7 m)* wide with two lifts, one larger one abaft the island and a smaller one amidships abreast the bridge. Six spots are provided with a seventh at the forward tip of the flight deck. A larger spot amidships aft is apparently for V/STOL.

Missiles: SS-N-12 is a development of SS-N-3 with a maximum range of 300 n. miles with active radar homing.

Radar: 3D search: Top Sail.
Search: (Air and Surface); Top Steer.
Fire control: One Trap Door (SS-N-12); two Head Light (SA-N-3); two Pop Group (SA-N-4); two Owl Screech *(76 mm)*; four Bass Tilt (Gatlings)
Aircraft control: Top Knot.
Navigation: Don Kay; Palm Frond; two Don 2.

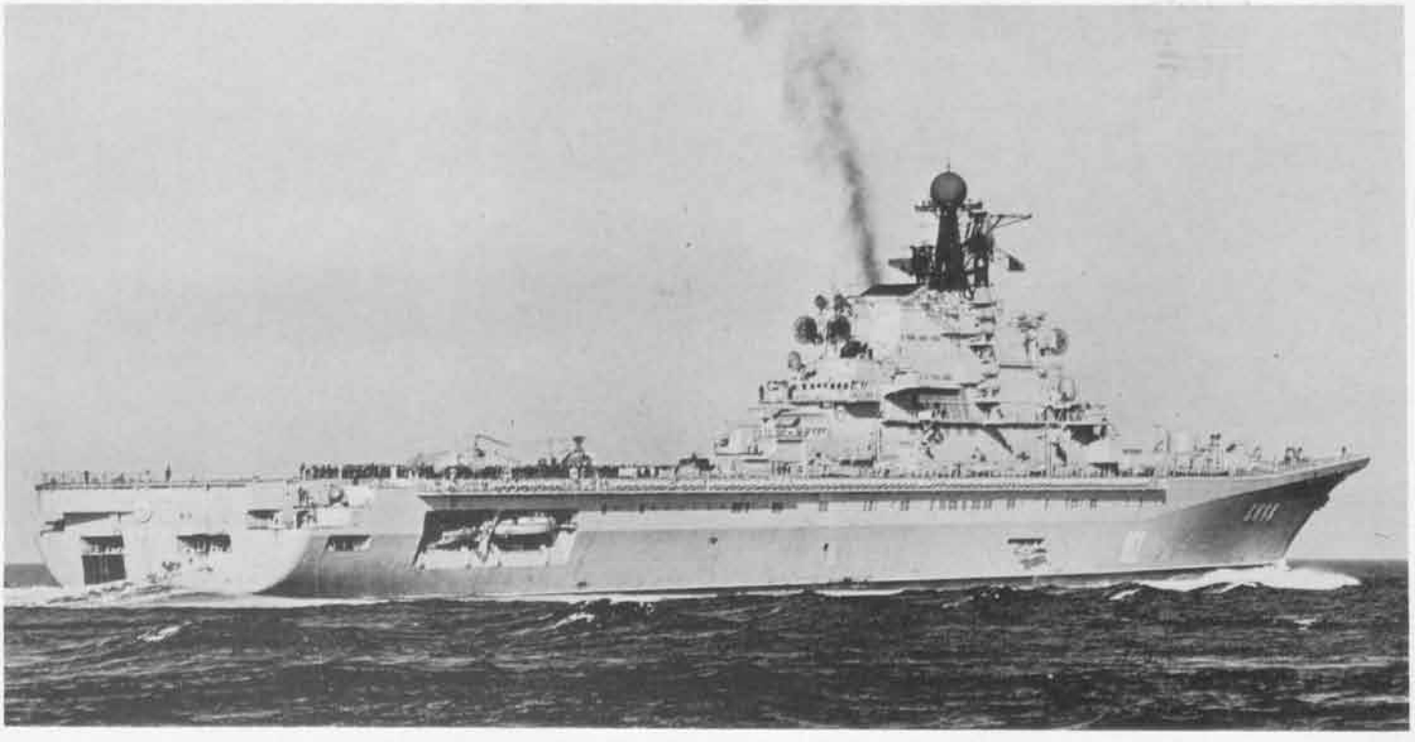
Sonar: LF hull-mounted and MF VDS.

Soviet type name: Although originally classified as protivolodochny kreyser meaning anti-submarine cruiser, this class now appears to be classified as TAKR which could be tyazhely avianosny kreyser meaning heavy aircraft carrying cruiser.

KIEV *1979*

KIEV

1/1980, Selçuk Emre



KIEV

1/1981, MOD

MINSK

7/1979

MINSK

3/1979, USN (PH 3 C. Fritz)

BATTLE CRUISERS

1 + 1 + ? "KIROV" CLASS

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
KIROV	Baltic Yard, Leningrad	1975	Dec 1977	1981
—	Baltic Yard, Leningrad	1976	—	1984

Displacement, tons: 22 000 standard; 25 000 full load
Dimensions, feet (metres): 820 × 90·1 × 32·8 *(250 × 27·5 × 10)*
Aircraft: 3—5 Hormone helicopters
Missiles: SSM; 20—SS-NX-19;
SAM; 12—SA-N-6; 2—SA-N-4;
ASW; 2—SS-N-14
Guns: 2—100 mm (singles); 8 Gatling 30 mm
A/S weapons: 1—12-barrelled MBU 6000 (forward);
2—6-barrelled MBU 1000 (aft)
Main engines: 2 nuclear reactors and oil-fired boilers for steam turbines
Speed, knots: 35
Complement: 900

This class of similar dimensions and speed to the battle-cruisers of the past appears to be a self-contained element coming between the "Kara" and "Kiev" with a much-enhanced range due to nuclear propulsion. The similarity between this design and that of the USN Strike Cruiser is apparent. The tasks of the latter, "Screening ships for carriers in high threat areas but also undertaking independent operations" could also be true of the "Kirov" class. As the support for a nuclear carrier or as the focus of a task force including the new cruisers and the "Kara", "Krivak" and "Ivan Rogov" classes with support from "Berezina" or "Boris Chilikin" classes they would form a formidable intervention force, with VTOL and helicopter aircraft as well as a full outfit of missiles and heavy guns. At least four of this class may be expected.

Electronics: Eight Side Globe; four Rum Tub; two Round House (ECM)

Engineering: The first Soviet surface combatant with nuclear propulsion.

Missiles: The introduction of the SA-N-6 missile with a ceiling of about 100 000 ft, a range between 6 and 40 miles, a 200 lb warhead and a speed of Mach 6 has provided a formidable new anti-aircraft missile defence.

Radar: Surveillance: One Top Pair (Top Sail + Big Net); one Top Steer.
Missile control: Head Light (SS-N-14);
two Top Dome (SA-N-6); two Pop Group (SA-N-4).
Gun control: Two Kite Screech (100 mm).
Four Bass Tilt (Gatlings).
Navigation: Two Palm Frond or Don Kay.

Sonar: Hull-mounted and VDS.

KIROV *1980, MOD*

KIROV *1980, MOD*

KIROV

1980, MOD

KIROV

1980, MOD

KIROV

1980, Royal Swedish Air Force

HELICOPTER CRUISERS

2 "MOSKVA" CLASS

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
MOSKVA	Nikolayev South	1963	1965	May 1967
LENINGRAD	Nikolayev South	1965	1966	late 1968

Displacement, tons: 16 500 standard; 20 000 full load
Dimensions, feet (metres): 624·8 × 111·5 max (75·4 wl) × 36·1 *(190·5 × 34 (23) × 11)*
Aircraft: 18 Hormone A ASW helicopters
Missiles: SAM;2 twin SA-N-3
Guns: 4—57 mm (twins)
Torpedo tubes: 10—21 in *(533 mm)* (quins) *(Leningrad only)*
A/S weapons: 1 twin SUW-N-1 A/S missile launcher; 2—12-barrelled MBU 6000 on forecastle
Main engines: Geared turbines; 2 shafts; 100 000 shp
Boilers: 4 water tube
Speed, knots: 30
Range, miles: 9 000 at 18 knots; 2 800 at 30 knots
Complement: 840

This class represented a radical change of thought in the Soviet fleet. The design must have been completed while the "November" class submarines were building and the heavy A/S armament and efficient sensors (helicopters and VDS) suggest an awareness of the problem of dealing with nuclear submarines. Alongside what is apparently a primary A/S role these ships have a capability for A/A warning and self-defence as well as a command function. With a full fit of radar and ECM equipment they clearly represent good value for money. Why only two were built is discussed earlier in the notes on the "Kiev" class aircraft carriers.

Air facilities: Hangar, feet (metres): 219·8 × 82 *(67 × 25)*
Deck, feet (metres): 265·7 × 111·5 *(81 × 34)*

Electronics: Eight Side Globe ECM.

Modification: In early 1973 *Moskva* was seen with a landing pad on the after end of the flight deck, probably for flight tests of VTOL aircraft. Since removed.

Radar: Search: Top Sail 3-D and Head Net C 3-D.
Fire control: Two Head Light; two Muff Cob.
Navigation: Three Don 2.

Sonar: Hull-mounted: One LF.
VDS: One MF.
In addition all helicopters have dunking-sonar.

Soviet type name: Protivolodochny kreyser meaning anti-submarine cruiser.

"MOSKVA" Class

LENINGRAD *8/1979, Selçuk Emre*

LENINGRAD *8/1979, Selçuk Emre*

MOSKVA *1978, Selçuk Emre*

CRUISERS

1 + 3 + ? "SOVREMENNY" CLASS

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
SOVREMENNY	Zhdanov Yard, Leningrad	1976	Nov 1978	Aug 1980 (see notes)
—	Zhdanov Yard, Leningrad	1977	Apr 1980	1982
—	Zhdanov Yard, Leningrad	1978	1981	—
—	Zhdanov Yard, Leningrad	1979	1982	—

Displacement, tons: 8 000
Dimensions, feet (metres): 508·4 × 59 × 20 *(155 × 18 × 6·2)*
Aircraft: 1 helicopter
Missiles: New SAM systems; SSM
Guns: 4—130 mm (twin turrets)
Torpedo tubes: 4—21 in *(533 mm)*
A/S weapons: 2—6-barrelled MBU (aft)
Main engines: Steam turbines
Complement: ? 400

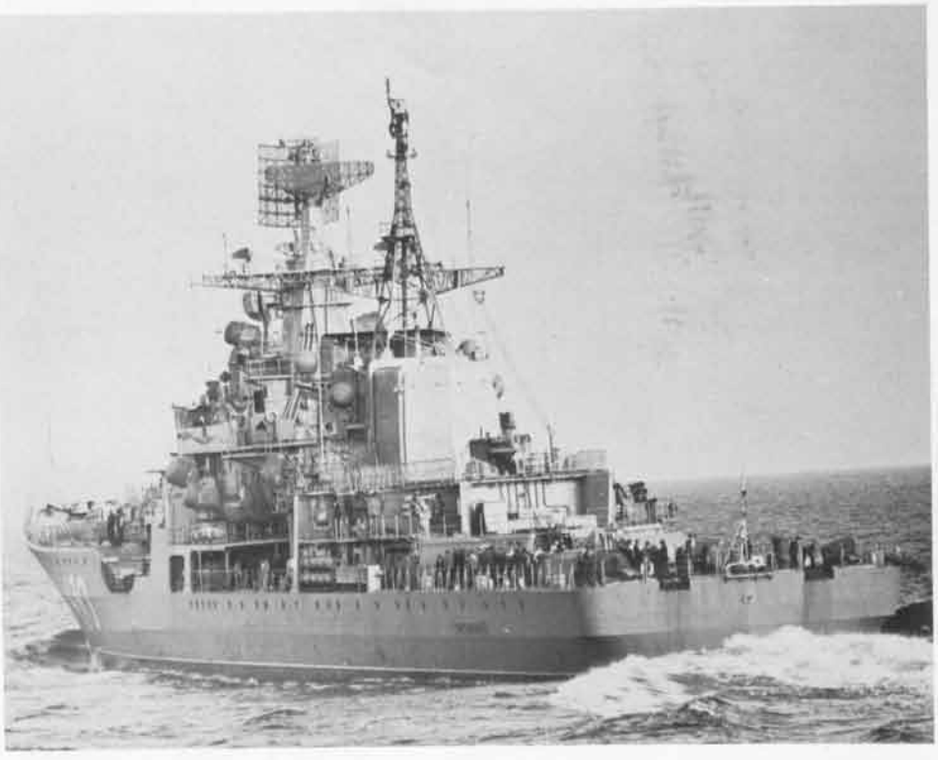
Built at the same yard as the "Kresta II" class. In August 1980 first of class appeared in the Baltic without a weapon fit, apparently on engine trials. Although she carries a helicopter in a telescopic hangar the absence of VDS suggests that she is unlikely to have a primary ASW role. Fitted with minerails.

Gunnery: This class may be fitted with a large calibre gun armament.

Missiles: The missile fit is uncertain but it is probable that a new SAM system similar to that fitted in *Provorny* could be shipped, together with an SSM system.

Radar: Surveillance: One Top Steer.
Missile control: One Band Stand.
Gun control: One Kite Screech; two Bass Tilt.

Sonar: Hull-mounted.



SOVREMENNY (before shipping of armament) *8/1980*

SOVREMENNY *1981, Federal German Navy*

0 + 3 NEW CONSTRUCTION

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
—	Nikolayev North (61 Kommuna)	1976	1979	1981
—	Nikolayev North (61 Kommuna)	1978	1980	1982
—	Nikolayev North (61 Kommuna)	1979	1981	1983

Displacement, tons: 13 000
Length, feet (metres): 600 *(183)* approx
Aircraft: ?
Missiles: SSM and SAM
Guns: ? 152 mm
Main engines: Gas turbines

This larger class is building at the same yard in place of the three "Kara" class (Nos 8-10). Probably fitted with Head Light radar and new SAM system.

1 + 3 "UDALOY" CLASS

(See Addenda)

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
UDALOY	Kaliningrad	1979	1981	1982
—	Kaliningrad	1980	1981	1983
—	Zhdanov Yard, Leningrad	1978	1980	1981/2
—	Zhdanov Yard, Leningrad	1980	1982	1983/4

Displacement, tons: 8 500
Length, feet (metres): 520 *(158·5)* approx
Aircraft: 2 helicopters (2 hangars)
Missiles: A/S—8 SS-N-14 (quads)
SAM—? SA-N-6
Guns: 2—100 mm (singles, fwd); 4 Gatlings
A/S weapons: 2 RBU 6000
Torpedo tubes: 10—21 in *(533 mm)* (quins)
Main engines: 4 Gas turbines

A new design of cruisers, successors to "Kresta II" class designed for ASW. Have four funnels similar to "Kashin" class. First of class carried out trials in the Baltic in April 1981.

Radar: Surveillance: 2 Head Net C
SSN-14 control: 2 Eye Bowl
100 mm gun control: Kite Screech
Gatling gun control: Bass Tilt (2)
Navigation: Don 2

Sonar: Bow-mounted and VDS.

UDALOY

1981, Federal German Navy

7 "KARA" CLASS (CG)

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
NIKOLAYEV	Nikolayev North (61 Kommuna)	1969	1970	1971
OCHAKOV	Nikolayev North (61 Kommuna)	1970	1971	1973
KERCH	Nikolayev North (61 Kommuna)	1971	1972	1974
AZOV	Nikolayev North (61 Kommuna)	1972	1973	1975
PETROPAVLOVSK	Nikolayev North (61 Kommuna)	1973	1974	1976
TASHKENT	Nikolayev North (61 Kommuna)	1974	1975	1978
TALLIN	Nikolayev North (61 Kommuna)	1975	1976	1979

Displacement, tons: 8 200 standard; 10 000 full load
Dimensions, feet (metres): 568 × 59 × 22 *(173·2 × 18 × 6·7)*
Aircraft: 1 Hormone A helicopter (Hangar aft)
Missiles: A/S: 8—SS-N-14 (2 quad launchers abreast bridge)
SAM: 2—SA-N-3 (twins)
SAM: 2—SA-N-4 (twins either side of mast)
Guns: 4—76 mm/59 (2 twins abaft bridge)
4—Gatling 30 mm (abreast funnel)
A/S weapons: 2—12-barrelled MBU 6000 (fwd)
2—6-barrelled MBU 1000 (aft)
Torpedo tubes: 10—21 in *(533 mm)* (2 quin mountings abaft funnel)
Main engines: COGOG; 4 gas turbines; 4 of 30 000 shp; 2 of 6 000 shp; 2 shafts
Speed, knots: 33
Range, miles: 8 000 at 18 knots; 3 000 at 32 knots
Complement: 540 (30 officers, 510 ratings)

Apart from the specialised "Moskva" class this is the first class of large cruisers to join the Soviet navy since the "Sverdlov" class. *Nikolayev* was first seen in public when she entered the Mediterranean from the Black Sea on 2 March 1973. Clearly capable of prolonged operations overseas. Fitted with stabilisers.
Azov is of a modified design but has not yet emerged from the Black Sea (see *Missiles* note).

Countermeasures: BAT-1 torpedo countermeasures.

ECM/ESM: A full outfit is housed on the bridge and mast including two Tee Plinth, eight Side Globe, two Bell Slam, one Bell Clout, two Bell Tap (*Kerch*, four Rum Tub, no Bell Slam or Bell Clout).

Gunnery: The siting of both main and secondary armament on either beams in the waist follows the precedent of both "Kresta" classes, although the weight of the main armament is increased.

Missiles: In addition to the "Kresta II" armament of eight tubes for the SS-N-14 A/S system (possibly with a surface-to-surface capability) and the pair of twin launchers for SA-N-3 system with Goblet missiles, "Kara" class mounts the SA-N-4 system in two silos, either side of the mast. The SA-N-3 system has only two loading doors per launcher and a larger launching arm. It is suggested that this might indicate an SSM capability for the SA-N-3. *Azov* is the trials ship for the new SAM system (possibly SA-N-6) designed for subsequent classes. This replaces the after SA-N-3, after MBUs and torpedo tubes of a standard "Kara".

Radar: Surveillance: Top Sail and Head Net C.
SA-N-3 control: Head Light (2).
SA-N-4 control: Pop Group (2).
76 mm gun control: Owl Screech (2).
Gatling gun control: Bass Tilt (2).
Navigation: Don Kay (2); Don 2 (1).
IFF: High Pole A; High Pole B.
(In *Azov* a new radar for SAM control, in place of Head Light, is mounted aft.)

"KARA" Class (Not *Azov*)

AZOV

1979

OCHAKOV

6/1979, Marius Bar

Sonar and A/S: VDS is mounted below the helicopter pad and is presumably complementary to a hull-mounted set or sets. The presence of the helicopter with dipping-sonar and an A/S weapon load adds to the long-range capability of this class.

Soviet type name: Bolshoy protivolodochny korabl, meaning large anti-submarine ship.

10 "KRESTA II" CLASS (CG)

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
KRONSHTADT	Zhdanov, Leningrad	1966	1968	1969
ADMIRAL ISAKOV	Zhdanov, Leningrad	1967	1969	1970
ADMIRAL NAKHIMOV	Zhdanov, Leningrad	1968	1970	1971
ADMIRAL MAKAROV	Zhdanov, Leningrad	1969	1971	1972
MARSHAL VOROSHILOV	Zhdanov, Leningrad	1970	1972	1973
ADMIRAL OKTYABRSKY	Zhdanov, Leningrad	1970	1972	1973
ADMIRAL ISACHENKOV	Zhdanov, Leningrad	1971	1973	1974
MARSHAL TIMOSHENKO	Zhdanov, Leningrad	1972	1974	1975
VASILY CHAPAYEV	Zhdanov, Leningrad	1973	1975	1976
ADMIRAL YUMASCHEV	Zhdanov, Leningrad	1974	1976	1977

Displacement, tons: 6 000 standard; 7 600 full load
Dimensions, feet (metres): 519·9 × 55·7 × 19·7 *(158·5 × 17·1 × 6)*
Aircraft: 1 Hormone A helicopter (hangar aft)
Missiles: A/S: 8—SS-N-14 (two quad launchers)
SAM: 4—SA-N-3 (two twin launchers)
Guns: 4—57 mm (2 twin); 4—Gatling 30 mm
A/S weapons: 2—12-barrelled MBU 6000 (fwd); 2—6-barrelled MBU (aft)
Torpedo tubes: 10—21 in *(533 mm)* (2 quin)
Main engines: 2 steam turbines; 2 shafts; 100 000 shp
Boilers: 4 water tube
Speed, knots: 34
Range, miles: 5 500 at 18 knots
Complement: 400

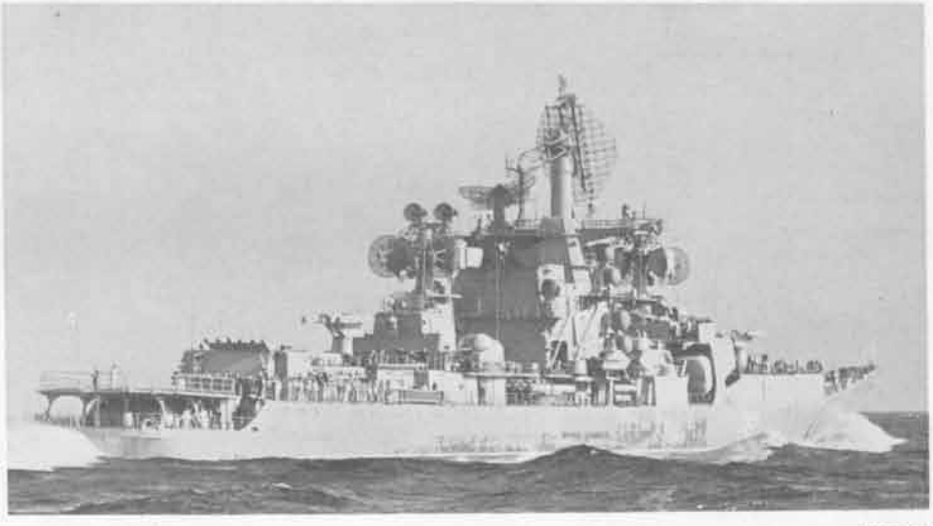
The design was developed from that of the "Kresta I" class, but the layout is more up-to-date. The missile armament shows an advance on the "Kresta I" SAM armament and a complete change of practice in the fitting of the SS-N-14 A/S missile system. The Zhdanov slipways are now in use for the succeeding new class, the "Kresta II" programme having been completed.

Electronics: ECM fit with eight Side Globe.

Radar: 3D search: Top Sail.
Search: Head Net C.
SA-N-3 control: Head Light (2).
57 mm control: Muff Cob (2).
Gatling control: Bass Tilt.
Navigation: Don Kay (2).

Soviet type name: Bolshoy protivolodochny korabl, meaning large anti-submarine ship.

"KRESTA II" Class



ADMIRAL ISACHENKOV

1/1980, RN

ADMIRAL NAKHIMOV

9/1979, MOD

ADMIRAL YUMASCHEV

6/1978, MOD

4 "KRESTA I" CLASS (CG)

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
ADMIRAL ZOZULYA	Zhdanov, Leningrad	Sep 1964	1966	1967
VLADIVOSTOK	Zhdanov, Leningrad	1965	1967	1968
VICE-ADMIRAL DROZD	Zhdanov, Leningrad	1965	1967	1968
SEVASTOPOL	Zhdanov, Leningrad	1966	1968	1969

Displacement, tons: 6 140 standard; 7 500 full load
Dimensions, feet (metres): 510 × 55·7 × 19·7 *(155·5 × 17 × 6)*
Aircraft: 1 Hormone B helicopter with hangar aft
Missiles: SSM; 4—SS-N-3B (2 twin launchers);
SAM; 4—SA-N-1 (2 twin launchers)
Guns: 4—57 mm (2 twins); 4 Gatling 30 mm *(Drozd* only)
A/S weapons: 2—12-barrelled MBU 6000 (fwd);
2—6-barrelled MBU (aft)
Torpedo tubes: 10 (2 quin) 21 in
Main engines: Steam turbines; 2 shafts; 100 000 shp
Boilers: 4 watertube
Speed, knots: 35
Range, miles: 5 500 at 18 knots
Complement: 375

"KRESTA I" Class

Provided with a helicopter landing deck and hangar aft for the first time in a Soviet ship. This gives an enhanced carried-on-board target-location facility for the 250 mile SS-N-3B system. The "Kresta I" was therefore the first Soviet missile cruiser free to operate alone and distant from own shore-based aircraft. The prototype ship *Admiral Zozulya* carried out sea trials in the Baltic in February 1967.

ECM: Full kit with eight Side Globe.

Radar: Search: Head Net C, Big Net and Plinth Net (2).
Fire control: Scoop Pair for Shaddock system;
Peel Group (2) for Goa system.
57 mm control: Muff Cob (2).
Gatling control: Bass Tilt (*Drozd* only) (2).
Navigation: Don Kay.
IFF: High Pole B.

Refit: The first ship undergoing a major refit, *Vice-Admiral Drozd,* was completed in 1975 with new Bass Tilt radar and Gatling guns on a new superstructure between the bridge and the tower mast.

Soviet type name: Originally bolshoy protivolodochny korabl, meaning large anti-submarine ship. Changed in 1977-78 to raketny kreyser, meaning missile cruiser.

ADMIRAL ZOZULYA *9/1978*

VLADIVOSTOK *1980, USN*

VICE-ADMIRAL DROZD (after 1975 refit) *2/1976, MOD(N)*

4 "KYNDA" CLASS (CG)

Name	*Builders*	*Laid down*	*Launched*	*Commissioned*
GROZNY	Zhdanov, Leningrad	June 1959	Apr 1961	June 1962
ADMIRAL FOKIN	Zhdanov, Leningrad	1960	Nov 1961	Aug 1963
ADMIRAL GOLOVKO	Zhdanov, Leningrad	1961	1963	July 1964
VARYAG	Zhdanov, Leningrad	1962	1964	Feb 1965

Displacement, tons: 4 400 standard; 5 700 full load
Dimensions, feet (metres): 465·8 × 51·8 × 17·4
(142 × 15·8 × 5·3)
Aircraft: Pad for helicopter on stern
Missiles: SSM: 8—SS-N-3B (quad launchers with one reload per tube);
SAM: 2—SA-N-1 (twin launcher)
Guns: 4—3 in *(76 mm)* (2 twins)
A/S weapons: 2—12-barrelled MBU 6000 on forecastle
Torpedo tubes: 6—21 in *(533 mm)* (2 triple amidships)
Main engines: 2 sets geared turbines; 2 shafts; 100 000 shp
Boilers: 4 high pressure
Speed, knots: 35
Range, miles: 6 000 at 15 knots
Complement: 390

"KYNDA" Class

Two enclosed towers, instead of masts, are stepped forward of each raked funnel. In this class there is no helicopter embarked, so guidance, for the SS-N-3B system would be more difficult than in later ships. She will therefore be constrained in her operations compared with the later ships with their own helicopters.

Radar: This class showed at an early stage the Soviet ability to match radar availability to weapon capability. The duplicated aerials provide not only a capability for separate target engagement but also provide a reserve in the event of damage.
Search: Head Net A (2) except *Varyag* with Head Net A and Head Net C.
Target designation: Plinth Net (2) in *Grozny* and *Varyag*.
Fire control: Scoop Pair (2) for Shaddock systems, Peel Group for Goa systems and Owl Screech for guns.
Navigation: Don 2 (2).
IFF: High Pole B.

Soviet type name: Raketny kreyser meaning missile cruiser.

ADMIRAL GOLOVKO *1979, Selçuk Emre*

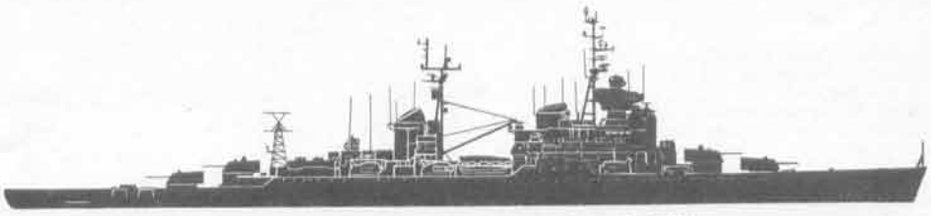
ADMIRAL GOLOVKO *7/1978*

ADMIRAL FOKIN *9/1979, USN*

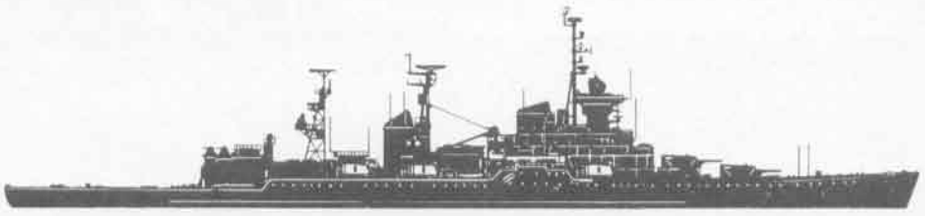
1 "SVERDLOV" (CG), 2 "SVERDLOV" (CC), and 9 "SVERDLOV" CLASSES (CL)

ADMIRAL LAZAREV
ADMIRAL SENYAVIN (CC)
ADMIRAL USHAKOV
ALEKSANDR NEVSKI
ALEKSANDR SUVOROV
DMITRI POZHARSKI
DZERZHINSKI (CG)
MIKHAIL KUTUZOV
MURMANSK
OKTYABRSKAYA REVOLUTSIYA
SVERDLOV
ZHDANOV (CC)

Displacement, tons: 16 000 standard; 17 500 full load
Dimensions, feet (metres): 689 × 72·2 × 24·5 *(210 × 22 × 7·5)*
Aircraft: Helicopter pad in *Zhdanov*. Pad and hangar in *Senyavin*
Armour: Belts 3·9—4·9 in *(100–125 mm)*; fwd and aft 1·6—2 in *(40–50 mm)*; turrets 4·9 in *(125 mm)*; C.T. 5·9 in *(150 mm)*; decks 1—2 in *(25—50 mm)* and 2—3 in *(50—75 mm)*
Missiles: SAM; 2—SA-N-2 (twin launcher) aft in *Dzerzhinski*; SAM; 2—SA-N-4 in *Zhdanov* and *Senyavin* (twin launcher) (see *Conversions*)
Guns: 12—6 in *(152 mm)* (4 triples), (9—6 in *(152 mm)* in *Dzerzhinski*); 12—3·9 in *(100 mm)* (6 twins); 16—37 mm (twins)
A. Senyavin; 6—6 in *(152 mm)* (2 triples); 12—3·9 in *(100 mm)* (6 twins); 32—37 mm (twins); 16—30 mm (twins)
Zhdanov; 9—6 in *(152 mm)* (3 triples); 12—3·9 in *(100 mm)* (6 twins); 32—37 mm (twins); 8—30 mm (twins)
(see *Conversions* note)
Mines: 150 capacity—(except *Zhdanov* and *Senyavin*)
Main engines: Geared turbines; 2 shafts; 110 000 shp
Boilers: 6 watertube
Speed, knots: 30
Oil fuel, tons: 3 800
Range, miles: 8 700 at 18 knots
Complement: 1 000 average



OKTYABRSKAYA REVOLUTSIYA, A. SUVOROV, A. USHAKOV



ADMIRAL SENYAVIN

Of the 24 cruisers of this class originally projected, 20 keels were laid at Leningrad, Nikolayev and Severodvinsk and 17 hulls were launched from 1951 onwards, but only 14 ships were completed by 1956. There were two slightly different types. *Sverdlov* and sisters had the 37 mm guns near the fore-funnel one deck higher than in later cruisers. All ships except *Zhdanov* and *Senyavin* are fitted for minelaying. Mine stowage is on the second deck. One ship in reserve.

Conversions: *Dzerzhinski* was fitted with an SA-N-2 launcher aft replacing X-Turret in 1961—presumably the experiment was not sufficiently successful to extend this item. In 1972 *Admiral Senyavin* returned to service with both X and Y turrets removed and replaced by a helicopter pad and a hangar surmounted by four 30 mm mountings and an SA-N-4 mounting. At about the same time *Zhdanov* had only X-turret removed and replaced by a high deckhouse mounting an SA-N-4. Both conversions took about three years.
Oktyabrskaya Revolutsiya completed refit in early 1977 and *Admiral Ushakov* and *Aleksandr Suvorov* in 1979 which included the extension of bridge work aft, the fitting of eight 30 mm mounts with associated four Drum Tilt radars and the removal of Egg Cup radars from 100 mm turrets.

Disposals: *Ordzhonikidze* transferred to Indonesia as *Irian* in 1962. *Admiral Nakhimov* scrapped in 1961.

Names: The ship first named *Molotovsk* was renamed *Oktyabrskaya Revolutsiya* in 1957.

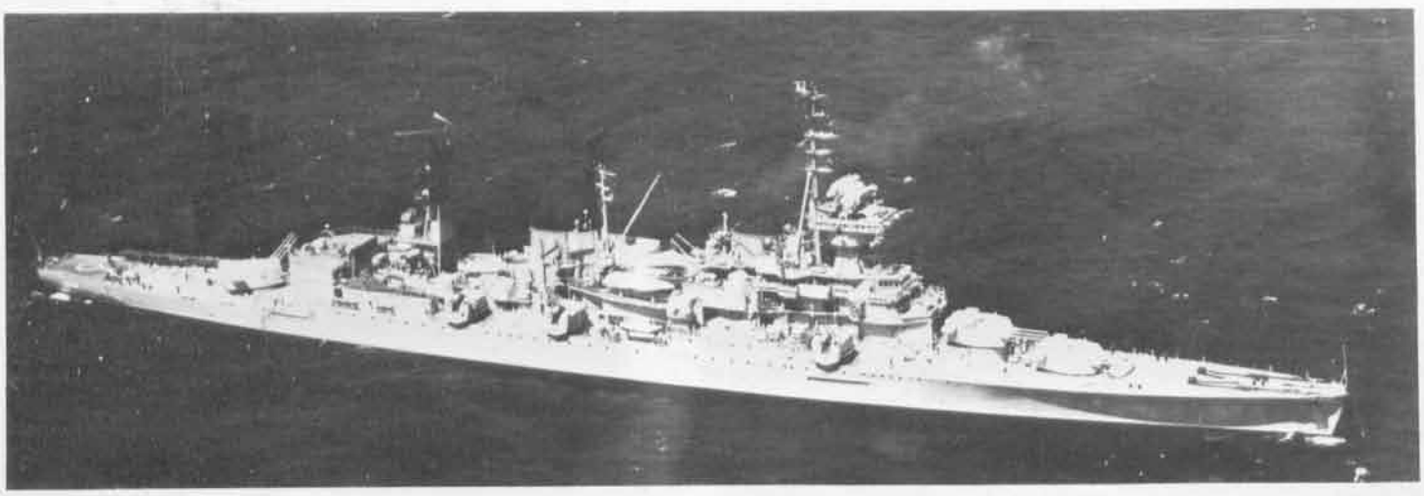
Torpedoes: All torpedo tubes removed by 1960.

Radar: Unmodified ships—
Air search: Big Net or Knife Rest or Top Trough or Half Slim Net.
Surface search: Low or High Sieve.
Target indication: Half Bow.
Fire control: Top Bow (152 mm); Egg Cup (152 mm and 100 mm turrets); Sun Visor (100 mm); Drum Tilt *(O. Revolutsiya, A. Suvorov* and *A. Ushakov)*.
Navigation: Don 2 (2) or Neptun.
Dzerzhinski—
Air search: Big Net; Slim Net.
Surface search: Low Sieve.
Missile control: Fan Song E.
Fire control: As in unmodified ships.
Navigation: Neptun.
A. Senyavin and *Zhdanov*—
Air search: Top Trough.
Surface search, navigation and fire control: As in *Dzerzhinski*.
30 mm control: Drum Tilt.
SA-N-4 control: Pop Group.

Soviet type name: Kreyser meaning cruiser—Korabl upravleniye meaning command ship for *A. Senyavin* and *Zhdanov*.

ADMIRAL USHAKOV

10/1979, MOD



ZHDANOV

1979, US Navy

DESTROYERS

13 "KASHIN" and 6 "MODIFIED KASHIN" CLASS (DDG)

KOMSOMOLETS UKRAINY
KRASNY-KAVKAZ
KRASNY-KRIM
OBRAZTSOVY (**)
ODARENNY (**)
OGNEVOY* (**)
PROVORNY
RESHITELNY
SDERZHANNY*
SKORY
SLAVNY* (**)
SMELY*
SMETLIVY
SMYSHLENNY*
SOOBRAZITELNY
SPOSOBNY
STEREGUSHCHY (**)
STROGY
STROYNY*

* modified (see *Conversion* note) (**) Zhdanov built, remainder at Nikolayev

Displacement, tons: 3 750 standard; 4 500 full load ("Kashin")
3 950/4 750 (Mod "Kashin")
Dimensions, feet (metres): 470·7 (481 mod) × 51·8 × 15·4
(143·3 (146·5) × 15·8 × 4·7)
Missiles: SAM: 4—SA-N-1 (twin launchers);
SSM: 4—SS-N-2C (singles) (Mod "Kashin")
Guns: 4—3 in *(76 mm)* (2 twin);
4—30 mm Gatlings (Mod "Kashin")
A/S weapons: 2—12-barrelled MBU 6000 fwd;
2—6-barrelled MBUs aft (unmodified)
Torpedo tubes: 5—21 in *(533 mm)* quin, amidships
Main engines: 4 sets gas turbines; 96 000 hp; 2 shafts
Speed, knots: 35
Range, miles: 4 500 at 18 knots
Complement: 280 (300 Mod "Kashin")

The first class of warships in the world to rely entirely on gas-turbine propulsion. These ships were delivered from 1963 to 1972—from the Zhdanov Yard, Leningrad (1964-66) and from the 61 Kommuna (North) Yard, Nikolayev (1963-72). *Sderzhanny*, last of the class, was the only one to be built to the modified design—all the remainder were converted after completion.
As they were built at the same time as "Kynda" class they may originally have been intended as AA support for the latter.

Conversion: In order to bring this class up-to-date with SSM and VDS a conversion programme was started in 1972 to the same pattern as set in *Sderzhanny*. This conversion consists of lengthening the hull by 10 ft, shipping four SS-N-2 (C) launchers (SSM), four Gatling close range weapons, a VDS under a new stern helicopter platform and removing the after MBUs. By 1978 five had been so converted. One of this class, *Provorny*, modified in mid-1970s, has a separate conversion from the remainder. This consists of the replacement of both SA-N-1 mountings by two new missile mountings. The forward of these is in a housing while the after is a single-arm SAM launcher. *Provorny* does not carry SS-N-2 and is still under trial in the Black Sea for weapons designed for the new classes of ship now under construction.

Loss: *Otvazhny* of this class foundered in the Black Sea in September 1974, apparently as the result of an internal explosion followed by a fire which lasted for five hours. Nearly 300 of the ship's company were lost, making this the worst peacetime naval loss for many years.

Radar: Unmodified ships—
Search: Head Net C and Big Net in some ships; Head Net A (2) in others.
Fire control: Peel Group (2) for Goa system and Owl Screech (2) for guns.
Modified ships—
Search: Head Net C and Big Net or Head Net A (2)
(Top Steer in *Provorny*).
Fire control: As in unmod plus Bass Tilt for Gatlings.
Navigation: Don Kay (2) or Don 2 (2).
IFF: High Pole B.

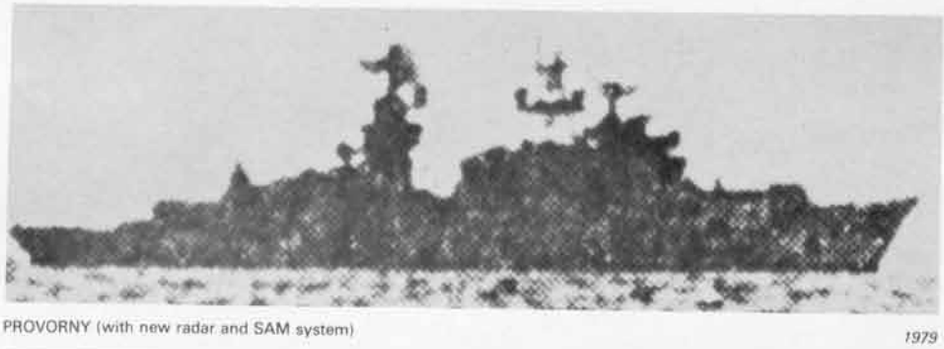
Sonar: Hull-mounted plus VDS in modernised ships.

Soviet type name: Bolshoy protivolodochny korabl, meaning large anti-submarine ship.

Transfers: Three additional ships of a modified design built for India. First transferred September 1980, the other two by 1982.

"KASHIN" Class

"MODIFIED KASHIN" Class



PROVORNY (with new radar and SAM system) *1979*

SDERZHANNY (modified) *8/1979, Selçuk Emre*

OBRAZTSOVY at Portsmouth *5/1976, C. and S. Taylor*

3 "MODIFIED KILDIN" and 1 "KILDIN" CLASSES (DDG)

BEDOVY*
NEUDERZHIMY
NEULOVIMY*
PROZORLIVY*

* modified

Converted "KILDIN" Class

Displacement, tons: 3 000 standard; 3 600 full load
Dimensions, feet (metres): 414·9 × 42·6 × 16·1 *(126·5 × 13 × 4·9)*
Missiles: SSM: 1—SS-N-1 (before conversion); SSM: 4—SS-N-2C (singles) (conversions)
A/S weapons: 2—16-barrelled MBU on forecastle
Guns: 4—76 mm (twins aft) (after conversion); 16—57 mm (quads—2 fwd, 2 between funnels)
Torpedo tubes: 4—21 in *(533 mm)* (2 twin)
Main engines: Geared turbines: 2 shafts; 72 000 shp
Boilers: 4 high pressure
Speed, knots: 35
Range, miles: 4 000 at 16 knots
Complement: 300 officers and men

The first ship of this class, *Bedovy*, from the shape of her funnels may have been altered from the "Kotlin" DD design to "Kildin" DDG during construction, being followed by the other three ships of this class built from the keel up as "Kildins". However the design is based on the "Kotlin" hull with the SS-N-1 replacing the after 130 mm turret and with two quadruple 57 mm mountings in place of the forward 130 mm turret. *Bedovy* built at Nikolayev, *Neuderzhimy* at Komsomolsk, *Neulovimy* at Leningrad and *Prozorlivy* at Nikolayev. All completed 1957-58.

Modification: In 1971 *Neulovimy* was taken in hand for modification. This was completed by 1973 and consisted of the replacement of the SS-N-1 on the quarterdeck by two superimposed twin 76 mm turrets, the fitting of four SS-N-2C launchers abreast the after funnel and the fitting of new radar. The substitution of the 40 n. mile SS-N-2C system (a modified Styx) for the obsolescent SS-N-1 system and the notable increase in gun armament illustrate two trends in Soviet thought. *Bedovy* and *Prozorlivy* completed this conversion in 1974 and 1976. The fourth ship *Neuderzhimy*, is unlikely to be modernised.

Radar: Original ships—
Air search: Slim Net and Flat Spin.
Fire control: Top Bow; Hawk Screech.
Conversions—
Air search: Head Net C (Strut Pair in *Bedovy*).
Fire control: Owl Screech (76 mm); Hawk Screech (57 mm).
Navigation: Don 2.
IFF: Square Head and High Pole A.

Sonar: Hull-mounted.

Soviet type name: Originally bolshoy protivolodochny korabl meaning large anti-submarine ship. Changed in 1977-78 to bolshoy raketny korabl meaning large missile ship.

"KILDIN" Class (before conversion)

3/1975, USN

NEULOVIMY after conversion

7/1978

NEULOVIMY

1978, Selçuk Emre

8 "KANIN" CLASS (DDG)

BOYKY **GNEVNY** **GREMYASHCHY** **ZHGUCHY**
DERZKY **GORDY** **UPORNY** **ZORKY**

Displacement, tons: 3 700 standard; 4 700 full load
Dimensions, feet (metres): 455·9 × 48·2 × 16·4 *(139 × 14·7 × 5)*
Aircraft: Helicopter platform
Missiles: SAM; 2—SA-N-1 (twin launcher aft)
Guns: 8—57 mm (2 quad fwd); 8—30 mm (twin) (by after funnel)
A/S weapons: 3—12-barrelled MBU 6000
Torpedo tubes: 10—21 in *(533 mm)* (2 quin)
Main engines: 2 sets geared steam turbines; 2 shafts; 84 000 shp
Boilers: 4 watertube
Speed, knots: 34
Oil fuel, tons: 900
Range, miles: 4 500 at 16 knots
Complement: 350

"KANIN" Class

Five ships of this class were converted from "Krupny" class at Zhdanov Yard, Leningrad (1968-72) and three in the Pacific (1974-78), being given a SAM capability instead of the latter's SSM armament. The original "Krupny" class was built at Leningrad, Nikolayev and in the Pacific between 1957 and 1962.

Appearance: As compared with the "Krupny" class these ships have enlarged bridge, converted bow (probably for a new sonar) and larger helicopter platforms.

Gunnery: The four twin 30 mm around the after funnel were a late addition to the armament.

Radar: Search: Head Net C.
Fire control: Peel Group for SA-N-1;
Hawk Screech for guns.
Drum Tilt (2) for additional 30 mm guns.
Navigation: Don Kay (2).

Sonar: Hull-mounted.

Soviet type name: Bolshoy protivolodochny korabl, meaning large anti-submarine ship.

GREMYASHCHY *12/1979, MOD*

ZHGUCHY *1976, Michael D. J. Lennon*

ZHGUCHY *10/1979, MOD*

8 "SAM KOTLIN" CLASS (DDG)

BRAVY*
NAKHODCHIVY
NASTOYCHIVY
NESOKRUSHIMY**
SKROMNY
SKRYTNY**
SOZNATELNY**
VOZBUZHDENNY

* Original R and D conversion ** Modified guns (30 mm)

Displacement, tons: 2 850 standard; 3 600 full load
Dimensions, feet (metres): 418·2 × 42·3 × 15·1
(127·5 × 12·9 × 4·6)
Missiles: SAM; SA-N-1 (twin launcher)
Guns: 2—5·1 in *(130 mm)* (1 twin); 4—45 mm (1 quad); (12—45 mm in *Bravy*); 8—30 mm (twins) (in three ships)
Torpedo tubes: 5—21 in *(533 mm)* (quin)
A/S weapons: 2—12-barrelled MBU 6000 (2—16-barrelled in *Bravy* and *Skromny*)
Main engines: Geared turbines; 2 shafts; 72 000 shp
Boilers: 4 high pressure
Speed, knots: 36
Oil fuel, tons: 800
Range, miles: 4 000 at 16 knots
Complement: 300

"SAM KOTLIN" Class

Converted "Kotlin" class destroyers with a surface-to-air missile launcher in place of the main twin turret aft and anti-aircraft guns reduced to one quadruple mounting in all but *Bravy* which still has three quadruple mountings.
The prototype *(Bravy)* was completed in 1961 and the others between 1967 and 1972. Three subsequently modified with 30 mm armament and Drum Tilt radar.

Appearance: The prototype SAM "Kotlin" *(Bravy)* has a different after funnel and different radar pedestal from those in the rest of the class.

Radar: Search: Head Net C; Head Net A in *Bravy*.
Fire control: Peel Group for SA-N-1;
Sun Visor for 130 mm guns;
Egg Cup in turret;
Hawk Screech for 45 mm guns;
Drum Tilt for 30 mm in modified ships.
Navigation: Don Kay or Don 2.
IFF: High Pole B.

Soviet type name: Eskadroyenny minonosets (esminets) meaning destroyer.

Transfer: One to Poland—ex-*Spravedlivy*.

BRAVY

4/1975, USN

"SAM KOTLIN" Class

1978

NASTOYCHIVY

6/1978, W. Admiraal

12 "MODIFIED KOTLIN" and 6 "KOTLIN" CLASSES (DD)

BLAGORODNY*
BLESTYASHCHY*
BURLIVY*
BYVALY*
DALNEVOSTOCHNY KOMSOMOLETS
MOSKOVSKY KOMSOMOLETS*
NAPORISTY*
PLAMENNY*
SPESHNY
SPOKOINY
SVEDUSHCHY*
SVETLY
VDOKHNOVENNY*
VESKY
VLIYATELNY
VOZMUSHCHENNY*
VYDERZHANNY*
VYZYVAYUSHCHY*

* Modified ships

Displacement, tons: 2 850 standard; 3 600 full load
Dimensions, feet (metres): 418·2 × 42·3 × 15·1
(127·5 × 12·9 × 4·6)
Guns: 4—5·1 in *(130 mm)* (2 twins); 16—45 mm (4 quads); 4 or 8—25 mm (twins) (in "Modified Kotlin" class)
A/S weapons: 2—16-barrelled MBU (fwd); 2—6-barrelled MBU (aft) ("Modified Kotlin" class); 6—DCT (unmod except *Svetly* which has a helo platform)
Torpedo tubes: 5 (mod) and 10 (unmod) 21 in *(533 mm)* (quin)
Mines: 80 capacity
Main engines: Geared turbines; 2 shafts; 72 000 shp
Boilers: 4 high pressure
Speed, knots: 36
Range, miles: 4 000 at 16 knots
Complement: 285

Built in 1954-56. Probably the last hull laid down was completed as "Kildin" class. Twelve modified in early 1960s. Several now in reserve.

Modifications: (a) Eight converted to "Sam Kotlin" class plus one transferred to Poland. (b) *Svetly* only ship now provided with helicopter platform on stern. (c) Modified ships had after torpedo-tubes replaced by a deckhouse. (d) Modified ships had two 16-barrelled MBUs (forward) and two 6-barrelled MBUs (aft) fitted. (e) The latest addition in some ships is the fitting of four or eight 25 mm either side of the after-funnel in place of two quad 45 mm.

Radar: Search: Slim Net.
Fire control: Sun Visor (130 mm); Egg Cup (130 mm turrets); Hawk Screech (45 mm); Post Lamp or Top Bow.
Navigation: Don (2) or Neptun.
IFF: High Pole and Square Head.

Sonar: One hull-mounted.

Soviet type name: Eskadroyenny minonosets (esminets) meaning destroyer.

"MODIFIED KOTLIN" Class

"KOTLIN" Class

1978

SVETLY (North Sea)

7/1976, MOD(N)

SPESHNY

7/1979

30 "SKORY" CLASS (DD)

BESSTRASHNY
BESSHUMNY*
BEZBOYAZNENNY*
BEZUDERZHNY
BEZUPRECHNY
BUYNY
OGNENNY*
OSTRY
OSTOROZHNY*
OTCHETLIVY*
OTMENNY
OTVETSTVENNY
OZHESTOCHENNY
OZHIVLENNY
SERDITY
SEREZNY
SMOTRYASHY
SOLIDNY
SOKRUSHITELNY
SOVERSHENNY
STATNY
STEPENNY
STOYKY
STREMITELNY
SUROVY
SVOBODNY
VDUMCHIVY
VNIMATELNY
VOLNY*
VRAZUMITELNY

* Modified

Displacement, tons: 2 240 standard; 3 080 full load
Dimensions, feet (metres): 395·2 × 38·9 × 15·1 *(120·5 × 11·9 × 4·6)*
Guns: 4—5·1 in *(130 mm)*/50 (2 twins) (all ships);
2—3·3 in *(85 mm)*, (1 twin) (unmodified);
8—37 mm (4 twin) or 7—37 mm (single), (unmodified);
4—25 mm (twin) (some unmodified); 5—57 mm (single) (modified)
A/S weapons: 4 DCTs (unmodified);
2—16-barrelled MBU (modified)
Torpedo tubes: 10—21 in *(533 mm)* (unmodified);
5—21 in (modified)
Mines: 80 can be carried
Main engines: 2 geared turbines; 2 shafts; 60 000 shp
Boilers: 4 high pressure
Speed, knots: 33
Range, miles: 3 900 at 13 knots
Complement: 280

There were to have been 85 destroyers of this class, but construction beyond 75 was discontinued in favour of later types of destroyers, and the number has been further reduced to about 30 by transfers to other countries, translations to other types and disposals. Further deletions expected in this elderly class of which twelve are in reserve. All originally built between 1949 and 1954 at Nikolayev, Severodvinsk and Leningrad.

Appearance: There were three differing types in this class, the anti-aircraft guns varying with twin and single mountings; and two types of foremast, one vertical with all aerials on top and the other with one aerial on top and one on a platform half way.

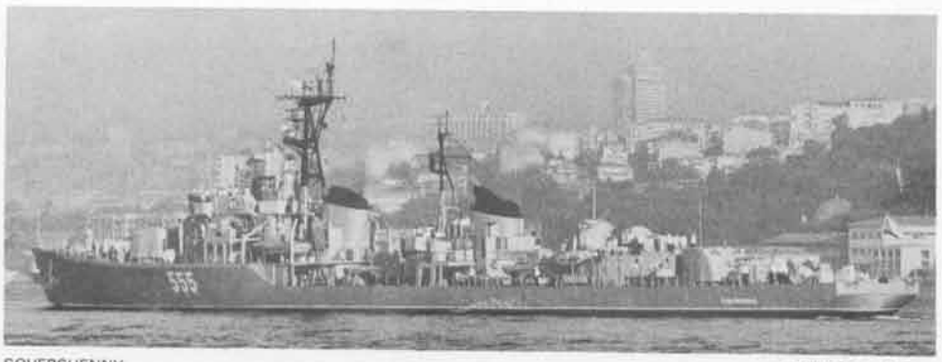
Modernisation: About eight ships of the "Skory" class were modified between 1958 and 1960 including extensive alterations to anti-aircraft armament, electronic equipment and anti-submarine weapons. These now have five 57 mm (single) in place of the 85 mm and 37 mm, five torpedo tubes and two 16-barrelled MBU. Two transferred to Egypt.

Radar: Search: Slim Net (mod);
High Sieve, Knife Rest or Cross Bird (unmod).
Fire control: Two Hawk Screech and Top Bow (mod);
Top Bow or Half Bow and Post Lamp (unmod).
Navigation: Don 2.
IFF: Square Head; High Pole A.

Transfers: Of this class *Skory* and *Smely* were transferred to the Polish Navy in 1957-58, two to the Egyptian Navy in 1956, two in 1961, four to the Indonesian Navy in 1959, one in 1962, two in 1964 and one in 1965 and a further two (modernised) to Egypt in 1968 in place of earlier pair.

Soviet type name: Eskadroyenny minonosets (esminets) meaning destroyer.

"SKORY" Class



SOVERSHENNY

8/1978, Selçuk Emre

SOVERSHENNY

8/1978, MOD

STEPENNY

1977

FRIGATES

19 + ? "KRIVAK I" and 10 + ? "KRIVAK II" CLASSES (FFG)

"KRIVAK I" (Zhdanov, Leningrad/Kaliningrad)

BDITELNY
BODRY
DRUZHNY
LENINGRADSKY KOMSOMOLETS
LETUCHY
PYLKY
RAZUMNY
RAZYASHCHY
RETIVY
SILNY
STOROZHEVOY
SVIREPY
ZADORNY
ZHARKI

"KRIVAK I" (Kamysch-Burun (Kerch))

BEZZAVETNY
BUZUKORIZNENNY
DOSTOYNY
DOBLESTNY
DEYATELNY

"KRIVAK II" (Kaliningrad)

BESSMENNY
GORDELIVY
GROMKY
GROZYASHCHY
NEUKROTIMY
RAZYTELNY
REZKY
REZVY
RYANY
+1

Displacement, tons: 3 000 standard; 3 800 full load
Dimensions, feet (metres): 401·8 × 45·9 × 15·4 *(122·5 × 14 × 4·7)*
Missiles: A/S: 4—SS-N-14 in A position (quad launcher); SAM: 4—SA-N-4 (twin launchers)
Guns: 4—3 in *(76 mm)* (2 twin) X and Y positions in "Krivak I"; 2—100 mm (singles, aft) in "Krivak II"
A/S weapons: 2—12-barrelled MBU 6000 (fwd)
Torpedo tubes: 8—21 in *(533 mm)* (2 quads)
Main engines: 4 sets gas turbines; 2 shafts; 72 000 shp
Speed, knots: 32
Range, miles: 4 000 at 15 knots
Complement: 220

This handsome class, the first ship of which appeared in 1970, incorporates A/S and anti-air capability, a VDS with associated MBUs, two banks of tubes, all in a hull designed for both speed and sea-keeping. The use of gas-turbines gives the "Krivak" class a rapid acceleration and availability. Building continues at about two per year.

Class: "Krivak II" class has X-gun mounted higher apart from other variations noted.
Now classified as "missile frigates" by NATO.

Missiles: The missiles of the SS-N-14 system continue the A/S trend of the "Kresta II" class and the "Kara" class. The SA-N-4 SAMs are of the same design which is now mounted also in the "Kiev", "Kara", "Nanuchka", "Grisha" and other classes. The launcher retracts into the mounting for stowage and protection, rising to fire and retracting to reload. The two mountings are forward of the bridge and abaft the funnel.

Radar: Search: One Head Net C.
Missile control: Two Eye Bowl (SS-N-14); two Pop Group (SA-N-4).
Gunnery control: One Owl Screech.
Navigation: One Don Kay; one Don 2.
IFF: High Pole B.

Sonar: One hull-mounted set in bow; one VDS.

Soviet type name: Originally bolshoy protivolodochny korabl, meaning large anti-submarine ship. Changed in 1977-78 to storozhevoy korabl meaning escort ship.

"KRIVAK" Class

DEYATELNY — *1978, Selçuk Emre*

"KRIVAK I" Class — *5/1980, USN (P.H.C. Tom Ryals)*

RAZYTELNY ("KRIVAK II" Class) — *8/1979, Selçuk Emre*

RAZYTELNY ("KRIVAK II" Class) — *1978, Selçuk Emre*

1 + ? "KONI" CLASS

DELFIN

Displacement, tons: 1 700 standard; 2 000 full load
Dimensions, feet (metres): 311·6 × 39·3 × 13·7 *(95 × 12 × 4·2)*
Missiles: SAM; 2—SA-N-4 (twin launchers)
Guns: 4—3 in *(76 mm)* (twins); 4—30 mm (twins)
A/S weapons: 2—12-barrelled MBU 6000 (fwd)
Main engines: CODAG; 1 gas turbine (centre shaft); 30 000 shp; 2 diesels (outer shafts); 12 000 shp
Speed, knots: 32 (gas); (22 diesel)
Range, miles: 2 000 at 14 knots
Complement: 110

First reported in the Black Sea in 1976. The second ship was transferred to the German Democratic Republic in June 1978 and named *Rostock*, with a follow-on ship in 1979 named *Berlin*. A third transfer in 1980 was made to Yugoslavia and named *Split*. How many of this class will be built for export is uncertain.

Radar: Search: Strut Curve.
Fire control: Owl Screech; Drum Tilt; Pop Group; Muff Cob.

Sonar: Hull-mounted.

"KONI" Class *8/1979*

Soviet type name: Storozhevoy korabl meaning escort ship.

9 "MIRKA I" and 9 "MIRKA II" CLASSES

Displacement, tons: 950 standard; 1 100 full load
Dimensions, feet (metres): 265·6 × 29·9 × 9·8 *(81 × 9·1 × 3)*
Guns: 4—3 in *(76 mm)* (2 twin)
A/S weapons: 4—MBU 6000 (2 fwd, 2 aft) ("Mirka I")
2—MBU 6000 (fwd) ("Mirka II")
Torpedo tubes: 5—16 in *(406 mm)* ("Mirka I"); 10—16 in *(406 mm)* ("Mirka II")
Main engines: 2 diesels; 12 000 hp; 2 gas turbines, 30 000 hp; 2 shafts
Speed, knots: 36
Range, miles: 2 500 at 20 knots
Complement: 98

This class of ships was built in 1964-67 as variation on "Petya" class. The difference between the Mk I and II is that the latter have the after MBU rocket launchers removed and an additional quintuple 16-in torpedo mounting fitted between the bridge and the mast.

Radar: Search: One Slim Net; Strut Curve.
One Strut Curve (II).
Fire control: One Hawk Screech.
Navigation: One Don 2.
IFF: Two Square Head; one High Pole B.

Sonar: One hull-mounted.
Dipping sonar is also fitted in some ships in the transom, and in others abreast the bridge.

Soviet type name: Originally maly protivolodochny korabl meaning small anti-submarine ship. Changed in 1977-78 to storozhevoy korabl meaning escort ship.

"MIRKA II" Class

"MIRKA II" Class (with dipping sonar door in port side of transom) *1980, MOD*

"MIRKA II" Class *12/1979, MOD*

"MIRKA I" Class *10/1979, MOD*

10 "PETYA I", 10 "MODIFIED PETYA I", 26 "PETYA II" and 1 "MODIFIED PETYA II" CLASSES

Displacement, tons: 950 standard; 1 100 full load
Dimensions, feet (metres): 270 × 29·9 × 10·5 *(82·3 × 9·1 × 3·2)*
Guns: 4—3 in *(76 mm)* (2 twins) (except in one "Mod Petya I" with only one twin)
A/S weapons: 4—MBU 2500 ("Petya I");
2—MBU 6000 ("Petya II"); 2 internal DC racks
Torpedo tubes: 5—16 in *(406 mm)* (quin) ("Petya I" and "Modified Petya I" except for one ship with none);
10—16 in *(406 mm)* (2 quins) ("Petya II")
Main engines: 1 diesel, 6 000 hp;
2 gas turbines; 30 000 hp; 3 shafts
Speed, knots: 35
Range, miles: 4 000 at 20 knots
Complement: 98

Small freeboard with a low wide funnel. The first ship reported to have been built in 1960-61 at Kaliningrad. Construction continued until about 1972. Fitted with two mine rails. "Petya II" class mount an extra quintuple torpedo tube in place of after MBUs.

Radar: Search: One Slim Net (I); one Strut Curve (II).
Fire control: One Hawk Screech.
Navigation: One Neptun or Don 2 (I); one Don 2 (I mod and II).
IFF: Two Square Head and one High Pole B (I);
one High Pole B (II).

Sonar: One hull-mounted (see VDS note).

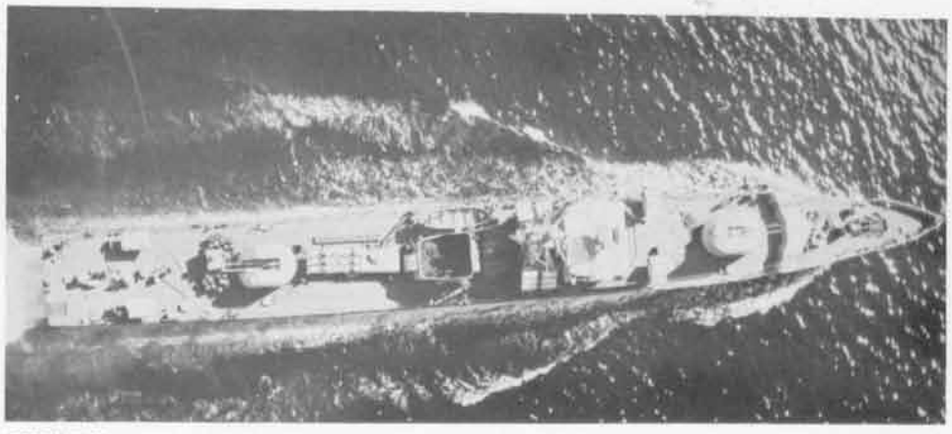
Soviet type name: Originally maly protivolodochny korabl meaning small anti-submarine ship. Changed in 1977-78 to storozhevoy korabl meaning escort ship.

Transfers: 12 to India, two to Syria, two to Viet-Nam December 1978.

VDS: In eight of "Petya I" class a deck-house containing VDS has replaced the after MBUs and encloses the quarter-deck whilst the prototype has the VDS in the open. This group, part of a continuing programme, is now classified "Modified Petya I" class (originally "Petya III"). In 1978 a new modification appeared—a "Petya II" with the after torpedo tubes removed and a deckhouse built abaft the after 76 mm gun to contain the VDS gear ("Modified Petya II"). One additional "Modified Petya I" has a deckhouse abaft the funnel and a totally different arrangement at the stern. This appears to be some form of ASW associated R. and D. equipment (see photograph).

"MODIFIED PETYA I" Class

"PETYA II" Class



"PETYA I" Class

1/1980, US Navy

"MODIFIED PETYA I" Class (with ASW R. and D. equipment aft)

11/1976

"PETYA II" Class

1/1978, MOD

48 "RIGA" CLASS

ARCHANGELSKY KOMSOMOLETS
ASTRAKHANSKY KOMSOMOLETS
BARS
BARSUK
BOBR
IRKUTSKY KOMSOMOLETS
KOBCHIK
KOMSOMOLETS GRUZY
KOMSOMOLETS LITVY
KRASNODARSKY KOMSOMOLETS
KUNITSA
LEOPARD
PANTERA
ROSOMOKHA
SOVETSKY AZERBAYDZHAN
SOVETSKY DAGESTAN
SOVETSKY TURKMENISTAN
VOLK
VORON
YAGUAR
+28

Displacement, tons: 1 000 standard; 1 320 full load
Dimensions, feet (metres): 300·1 × 33·1 × 10·5 *(91·5 × 10·1 × 3·2)*
Guns: 3—3·9 in *(100 mm)* (single); 4—37 mm (2 twins); 4—25 mm (twins) in some
A/S weapons: 2—16-barrelled MBU 2500; 2 DC racks, 4 DCTs (some)
Torpedo tubes: 2 or 3—21 in *(533 mm)*
Mines: 50
Main engines: 2 geared turbines; 2 shafts; 20 000 shp
Boilers: 2
Speed, knots: 28
Range, miles: 2 000 at 15 knots
Complement: 175

"RIGA" Class

Built from 1952 to 1959. Successors to the "Kola" class escorts, of which they are lighter and less heavily armed but improved versions. Fitted with mine rails. At least 12 in reserve.

Anti-submarine: The two 16-barrelled MBU rocket launchers are mounted just before the bridge abreast B gun.

Conversion: A small number of this class has been improved. Some have a twin 25 mm gun mounting on either side of the funnel.

Radar: Search: One Slim Net.
Fire control: One Sun Visor B; one Wasp Head.
Navigation: Don 2/Neptun.
IFF: Two Square Head; one High Pole.

Sonar: One hull-mounted HF.
Dipping sonar abreast bridge in some.

Soviet type name: Storozhevoy korabl meaning escort ship.

Transfers: Two to Bulgaria (1957-58), four to East Germany (1956-59), two to Finland (1964), eight to Indonesia (1962-65).

"RIGA" Class *1980, MOD*

1 "PURGA" CLASS

Displacement, tons: 2 250 standard; 3 000 full load
Dimensions, feet (metres): 295·2 × 44·3 × 17·1 *(90 × 13·5 × 5·2)*
Guns: 3—3·9 in *(100 mm)* (singles)
Mines: 50 capacity
Main engines: 2 diesels; 6 500 hp; 2 shafts
Speed, knots: 18
Complement: 250

Laid down in 1939 in Leningrad and completed in 1948. Equipped as icebreaker. Fitted with director similar to those in the "Riga" class frigates. Modernised in 1958-60. May be operated by KGB.

Radar: One Slim Net; one High Sieve; one Cross Bird.
Fire control: Wasp Head; Sun Visor.
Navigation: Neptun.
IFF: Two Square Head; one High Pole.

"PURGA" Class

16 "GRISHA I", 6 "GRISHA II" and 20 "GRISHA III" CLASSES

AMETYST, BRILLANT, IZUMRUD, RUBIN, SAFFIR, ZEMCHUG
(All "Grisha II" class (KGB))

Displacement, tons: 950 standard; 1 100 full load
Dimensions, feet (metres): 239·4 × 31·8 × 12·1 *(73 × 9·7 × 3·7)*
Missiles: SAM; 2—SA-N-4 (twin launcher) ("Grisha I" and "III" classes)
Guns: 2—57 mm (1 twin) (4 in "Grisha II" class);
30 mm Gatling mount aft ("Grisha III" class)
Torpedo tubes: 4—21 in *(533 mm)* (2 twins)
A/S weapons: 2 MBU 6000
Mines: Fitted for minelaying
Main engines: 1 gas turbine; 12 000 shp; 2 diesels; 18 000 shp; 3 shafts = 36 knots
Range, miles: 2 000 at 20 knots
Complement: 80

Reported to have started series production in late 1969-70. Continuing programme of about three a year. SA-N-4 launcher mounted on the forecastle in "Grisha I" and "III" classes. This is replaced by a second twin 57 mm in "Grisha II" class which are operated by KGB. "Grisha III" class has Muff Cob radar removed, Bass Tilt and Gatling (fitted aft), and Rad-haz screen removed from abaft funnel.

Names: Only the KGB ships have names.

Radar: Air search: One Strut Curve.
Fire control: Pop Group (SA-N-4 "Grisha I" and "III");
Muff Cob (57 mm) (except in "Grisha III");
Bass Tilt (57 mm and Gatlings) ("Grisha III").
Navigation: One Don 2.
IFF: High Pole B.

Sonar: One hull-mounted. Some have a similar VDS to that used in Hormone helicopters.

Soviet type name: Maly protivolodochny korabl meaning small anti-submarine ship.

"GRISHA I" Class

"GRISHA III" Class

"GRISHA III" Class

6/1978, MOD

"GRISHA II" Class

6/1976, MOD

"GRISHA I" Class

8/1979, MOD

LIGHT MISSILE FORCES

16 + ? "NANUCHKA I" and 5 + ? "NANUCHKA III" CLASSES (MISSILE CORVETTES)

Displacement, tons: 780 standard; 900 full load
Dimensions, feet (metres): 197·8 × 40 × 10·2 *(60·3 × 12·2 × 3·1)*
Missiles: SSM; 6—SS-N-9 (two triple launchers);
SAM; 2—SA-N-4 (twin launcher);
Guns: 2—57 mm (1 twin) (I); 1—76 mm; 1—30 mm Gatling ("Nanuchka III")
Main engines: 6 M503A diesels; 30 000 shp; 3 shafts
Speed, knots: 34
Range, miles: 4 500 at 15 knots
Complement: 70

Probably mainly intended for deployment in coastal waters although several have been deployed in the Mediterranean, North Sea and Pacific. Built from 1969 onwards. Has received many type designations including "Missile Cutter". Built at Petrovsky, Leningrad (continuing programme) and possibly in the Pacific. SS-N-9 has a range of about 60 miles.

New construction: "Nanuchka III", first seen in 1978, has a 76 mm in place of the twin 57 mm and an added Gatling as in "Grisha III", Bass Tilt radar in place of Muff Cob and a heavier mast structure.

Radar: Air search: Band Stand.
Surface/search/navigation: One Peel Pair; one Spar Stump.
Fire control: Two Fish Bowl; one Muff Cob (one Bass Tilt in "Nanuchka III");
Pop Group and Band Stand (SS-N-9) in radome.
Navigation: Don.
IFF: High Pole; Square Head.

Soviet type name: Raketny korabl meaning missile ship.

Transfers: Three of a modified version of "Nanuchka I" ("Nanuchka II") with four SS-N-2B missiles have been supplied to India in 1977-78 and one to Algeria in 1980.

"NANUCHKA I" Class

"NANUCHKA III" Class *6/1979*

"NANUCHKA I" Class *7/1976, MOD(N)*

2 + ? "TARANTUL" CLASS (MISSILE CORVETTES)

Displacement, tons: 760 full load
Dimensions, feet (metres): 183·7 × 34·4 × 8·1 *(56 × 10·5 × 2·5)*
Missiles: SSM; 4—SS-N-2C (twins)
Guns: 1—76 mm (fwd); 2—30 mm Gatling (aft, both beams)
Main engines: 3 gas turbines
Speed, knots: 35
Complement: 50

First sighted early 1979. Built at Petrovsky, Leningrad. First laid down early 1977 and launched April 1978. Second laid down early 1978.

Radar: Fire control: Bass Tilt.
IFF: Square Head and High Pole.

"TARANTUL" Class *1980, Royal Swedish Air Force*

1 + ? "SARANCHA" CLASS
(FAST ATTACK CRAFT—MISSILE HYDROFOIL)

Displacement, tons: 280 full load
Dimensions, feet (metres): 147·6 × 32·8 × 6·6 *(45 × 10 × 2)*
Missiles: SSM; 4—SS-N-9 (twin launchers);
SAM; 1—SA-N-4 (twin launcher)
Gun: 1—30 mm Gatling
Main engines: 2 gas turbines; 2 diesels; 13 900 hp; 4 shafts = 45 knots
Complement: 35

First reported 1976. Built at Petrovsky, Leningrad—class could be "Nanuchka" successor. Foil system similar to US "PHM", thus being the first Soviet fully rigged hydrofoil.

Radar: Air search: Band Stand.
Fire control: Fish Bowl; Bass Tilt.
IFF: High Pole and Square Head.

SARANCHA *1979*

10 + 3 "MATKA" CLASS
(FAST ATTACK CRAFT—MISSILE HYDROFOIL)

Displacement, tons: 215 full load
Dimensions, feet (metres): 128·7 × 27·9 × 5·9 *(39·3 × 8·5 × 1·8)*
Missiles: SSM; 2—SS-N-2C
Guns: 1—76 mm; 1—30 mm Gatling
Main engines: 3 diesels; 13 500 hp = 40 knots
Complement: 33

In early 1978 the first of class was seen. Built at Izhora Yard, Leningrad. Similar hull to the "Osa" class with similar single hydrofoil system to "Turya" class. The combination has produced a better sea-boat than the "Osa" class which the "Matka" class will probably replace.

Radar: Fire control: Bass Tilt.
IFF: High Pole and Square Head.

"MATKA" Class *1980, Royal Swedish Air Force*

70 "OSA I" and 50 "OSA II" CLASSES
(FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers) (see note)
Guns: 4—30 mm; (2 twin, 1 fwd, 1 aft)
Main engines: 3 diesels; M503; 12 000 bhp (I); M504; 15 000 bhp (II) = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

"Osa I" class built in first half of the 1960s and "Osa II" class in the latter half. They have a surface-to-surface missile range of up to 23 miles. Later boats have cylindrical missile launchers, comprising the "Osa II" class.
This class was a revolution in naval shipbuilding. Although confined by their size and range to coastal operations the lethality and accuracy of the Styx missile have already been proved by the sinking of the Israeli destroyer *Eilat* on 21 October 1967 by an Egyptian "Komar".

Missiles: A few ships have SA-N-5 (converted Grail SA7) (quad) launchers.

Radar: Search: Square Tie.
Fire control: Drum Tilt.
IFF: High Pole; Square Head (2).

Transfers: Algeria (11), Bulgaria (4), Cuba (12), Egypt (12), East Germany (15), Ethiopia (2), Finland (4), India (16), Iraq (12), North Korea (8), Libya (12), Poland (13), Romania (5), Somalia (2), Syria (15), South Yemen (5), Viet-Nam (8), Yugoslavia (10).

"OSA II" Class *1977*

"OSA II" Class (with SA-N-5 amidships aft) *4/1976*

"OSA I" Class *4/1974*

"OSA I" Class *1977*

LIGHT FORCES

30 "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twin)
Torpedo tubes: 4—21 in *(533 mm)* (single)
A/S weapons: 12 DCs
Main engines: 3 M503A diesels; 3 shafts; 12 000 bhp = 40 knots
Range, miles: 450 at 34 knots
Complement: 16

First of class produced in 1962. Programme completed by 1974.
The "Mol" class is an export version of the "Shershen".

Radar: Search: Pot Drum.
Fire control: Drum Tilt.
IFF: High Pole A and Square Head.

Transfers: Angola (3), Bulgaria (6), Cape Verde (3), Congo (1), East Germany (18), Egypt (6), Guinea (3), Guinea-Bissau (1), North Korea (4), Viet-Nam (8), Yugoslavia (2).
"Mol" class: Ethiopia (2 in 1978), Somalia (4 in 1976-77), Sri Lanka (1 in 1975).

"SHERSHEN" Class *1980*

30 "TURYA" CLASS (FAST ATTACK CRAFT—TORPEDO HYDROFOIL)

Displacement, tons: 190 standard; 250 full load
Dimensions, feet (metres): 128·7 × 26·6 × 5·9 *(39·3 × 8·1 × 1·8)*
Guns: 2—57 mm (twin, aft); 2—25 mm (twin, fwd)
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 3 M504 diesels; 15 000 shp; 3 shafts
Speed, knots: 42
Complement: 30

The second class of hydrofoil with single foil forward. Has a naval orientation rather than the earlier "Pchela" class of the KGB. Entered service from 1971—probably now produced only for export. Basically "Osa" hull.

Radar: Search: Pot Drum.
Fire control: Muff Cob.
IFF: High Pole and Square Head.

Sonar: A form of dipping sonar is fitted on the transom (similar to Hormone sonar) thus giving this class both an A/S and anti-ship capability.

Transfers: Two to Cuba 9 February 1979, two in February 1980 and two in February 1981.

"TURYA" Class *1980*

1 + ? "PAUK" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 600 approx
Dimensions, feet (metres): 205 × 26 × 9·5 *(62·5 × 8 × 2·9)*
Guns: 2—57 mm (twin); 1—30 mm Gatling
Torpedo tubes: 4—16 in (406 mm) (singles)
Main engines: 2 gas turbines(?) = 34 knots(?)
Complement: 80(?)

First seen in 1980. Possible replacement for "Poti" class.

Radar: Bass Tilt.
Sonar: Large VDS on transom.

"PAUK" Class *1980*

64 "POTI" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 200·1 × 25·9 × 9·2 *(61 × 7·9 × 2·8)*
Guns: 2—57 mm (1 twin mounting)
Torpedo tubes: 4—16 in *(406 mm)*
A/S weapons: 2—MBU 6000
Main engines: 2 gas turbines; 24 000 shp; 2 M503A diesels; 8 000 shp; 2 shafts = 34 knots
Range, miles: 2 600 at 16 knots; 6 000 at 10 knots
Complement: 80

This class of ship was under series construction from 1961 to 1968.

Radar: Air search: Strut Curve.
Fire control: Muff Cob.
Navigation: Spin Trough.
IFF: One High Pole B.

Soviet type name: Maly protivolodochny korabl meaning small anti-submarine ship.

Transfers: Three to Bulgaria (mid-1970s), three to Romania (late 1960s).

"POTI" Class *USN*

18 "T 58" CLASS (PATROL SHIPS)

DZERZHINSKY, KORUND, PRIMORSKY KOMSOMOLETS +15

Displacement, tons: 790 standard; 900 full load
Dimensions, feet (metres): 229·9 × 29·5 × 7·9 *(70·1 × 9 × 2·4)*
Guns: 4—57 mm (2 twin); 4—25 mm (twins) (in some)
A/S weapons: 2—MBU 1800; 2 DCTs
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 17 knots
Range, miles: 3 500 at 12 knots
Complement: 82

Built from 1957 to 1963. Steel hulls. Of this class 12 were converted to submarine rescue ships with armament and sweeping gear removed, see later page ("Valday" class). Frequently deployed to the Indian Ocean. Have minelaying capability. One has been sighted with Big Net radar. A number is employed by the KGB, these being named.

Radar: Search: Ball End.
Fire control: Muff Cob (in most).
Navigation: Neptun or Don 2.
IFF: Two Square Head; one High Pole.

Transfers: One to Guinea (1979); one to South Yemen (1978).

"T 58" Class *1978*

1 "BABOCHKA" CLASS (FAST ATTACK CRAFT—PATROL HYDROFOIL)

Displacement, tons: 400 full load
Dimensions, feet (metres): 164 × 27·9 × 6·6 *(50 × 8·5 × 2)*
Guns: 2—30 mm Gatling
A/S weapons: 8 A/S torpedo tubes (quads, fwd)
Main engines: 3 gas turbines; 2 diesels = 45 knots
Complement: 45

This is a much larger hydrofoil than any previously seen. First sighted 1977. Unusual features include a new hydrofoil arrangement with a single fixed foil forward, the large gas turbine exhausts aft, the trainable torpedo mountings forward and the large object forward of the first Gatling. Probably used for research and development.

Radar: Bass Tilt.

"BABOCHKA" Class *1978*

45 "SO I" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 170 standard; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (2 twin mountings) (see notes)
A/S weapons: 4—MBU (5-barrelled)
Torpedo tubes: 2—16 in *(406 mm)* (some)
Mines: Can carry 12
Main engines: 3 diesels; 7 500 bhp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Built between 1957 and late 1960s—total about 150. Steel hulled. Some of this class have one 57 mm and two 25 mm guns. A few have been modernised with two 16-in anti-submarine torpedo tubes and only two 25 mm guns. This class is being phased out of service, although about half of the total are operated by the KGB.

Radar: Search: Pot Head.
IFF: High Pole A; Dead Duck.

Soviet type name: Maly protivolodochny korabl meaning small anti-submarine ship.

Transfers: Algeria (6), Bulgaria (6), Cuba (12), Egypt (12), East Germany (12), Iraq (3), North Korea (15), Viet-Nam (4), South Yemen (2).

"SO I" Class *1974*

"SO I" Class (modified with torpedo tubes) *1980*

90 "STENKA" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 170 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Guns: 4—30 mm (2 twin)
Torpedo tubes: 4—16 in *(406 mm)*
A/S weapons: 2 depth charge racks
Main engines: 3 M503A diesels; 12 000 bhp = 36 knots
Complement: 30

Based on the hull design of the "Osa" class. Built from 1967-77.

Radar: Search: Pot Drum.
Fire control: Muff Cob.
IFF: High Pole; Square Head (2).

Sonar: Have Hormone type dipping sonar.

Transfers: Bulgaria (3) in 1977.

"STENKA" Class *5/1978, Tass*

1 "SLEPEN" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Guns: 1—76 mm; 1—30 mm Gatling
Main engines: 3 M503A diesels; 3 shafts; 12 000 shp = 36 knots
Complement: 30

Built on an "Osa" hull this single craft has the tripod mast mounted further aft and different radar. Originally built at Petrovsky, Leningrad in 1970 with twin 57 mm, 30 mm Gatling and prototype Bass Tilt as trials ship for "Grisha III" class. In 1975 the 57 mm replaced by single 76 mm turret as trials ship for "Matka" and "Nanuchka III" classes. Also carried out trials for Chaff launchers for "Krivak" and "Nanuchka" classes.

"SLEPEN" Class (with 57 mm guns) *1974*

20 "PCHELA" CLASS (FAST ATTACK CRAFT—PATROL HYDROFOIL)

Displacement, tons: 70 standard; 80 full load
Dimensions, feet (metres): 83 × 19 × 4·3 *(25·3 × 5·8 × 1·3)* (without foils)
Guns: 4—23 mm MGs (2 twins)
A/S weapons: 6 DCs
Main engines: 2 diesels; 4 800 bhp; 2 shafts = 45 knots
Complement: 12

This class of hydrofoil is reported to have been built in the mid-1960s. Used for frontier guard duties by KGB in Baltic and Black Seas.

Radar: Search: Pot Drum.
IFF: High Pole B.

Sonar: A type of dipping sonar in some.

"PCHELA" Class *1976*

30 "ZHUK" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 60
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 2—14·5 mm (twin fwd); 1—12·7 mm (aft)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

First seen in 1976.
Mainly manned by the KGB. Export versions have twin (over/under) 14·5 mm aft.

Radar: One navigation set.

Transfers: Angola, Benin (3 in 1978-80), Cape Verde (1 in 1980), Cuba (16 in 1975-78), Iraq (5 in 1975), Mozambique (3 in 1978-79), Somalia (3 in 1977), Viet-Nam (6 in 1978-79),North Yemen (2 in 1978), South Yemen (2 in 1975).

"ZHUK" Class *1979*

RIVER PATROL CRAFT

Notes: (a) Attached to Black Sea and Pacific Fleets for operations on the Danube, Amur and Usuri Rivers, and to the Caspian Flotilla.
(b) Reports of another class of five river patrol craft.

80 "SHMEL" CLASS

Displacement, tons: 80 full load
Dimensions, feet (metres): 91·8 × 14·1 × 3·6 *(28 × 4·3 × 1·1)*
Guns: 1—76 mm/48 (tank turret); 2—25 mm/70 (twin)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts
Speed, knots: 22
Complement: 12

Some also mount one or two multi-barrelled rocket launchers amidships. Built 1967-74.
This class superseded the "BK 4" class which have now been deleted. Earlier "Shmel" class vessels have an after twin machine gun mount. Probably more than half of this class is in reserve.

"SHMEL" Class

1 COMMAND SHIP

SSV-10

Displacement, tons: 300
Guns: 2—20 mm
Speed, knots: 12

Support ship on the Danube for the river patrols.

SSV-10 (old number) *4/1975, Heinz Stockinger*

MINE WARFARE FORCES

3 "ALYOSHA" CLASS (MINELAYERS)

075 083 PRIPYAT

Displacement, tons: 3 000 standard; 3 700 full load
Dimensions, feet (metres): 321·4 × 44·3 × 17·7 *(98 × 13·5 × 5·4)*
Guns: 4—57 mm (quad fwd)
Mines: 70
Main engines: 4 diesels; 2 shafts; 8 000 bhp = 22 knots
Range, miles: 8 000 at 14 knots
Complement: 190

In service since 1965. Fitted with four mine tracks to provide stern launchings. Also have a capability in general support role.

Radar: Search: Strut Curve.
Fire control: Muff Cob.
Navigation: Don 2.
IFF: High Pole B.

"ALYOSHA" Class *1980*

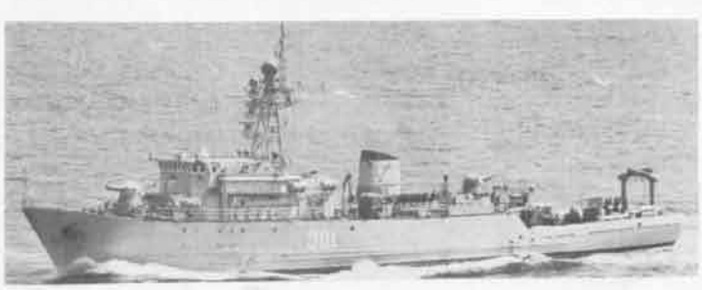
30 "NATYA" CLASS (MINESWEEPERS—OCEAN)

Displacement, tons: 650 standard; 950 full load
Dimensions, feet (metres): 200·1 × 32·8 × 11·5 *(61 × 10 × 3·5)*
Guns: 4—30 mm (2 twins); 4—25 mm (2 twins)
A/S weapons: 2—MBU 5-barrelled
Mines: 10
Main engines: 2 diesels; 8 000 bhp; 2 shafts = 20 knots
Complement: 50

First reported in 1971, as successor to the "Yurka" class. Steel hulls. Construction for Soviet navy probably ceased in late 1970s although building continued for India. Usually operate in home waters but are deployed to the Mediterranean, Indian Ocean and West Africa. Some have hydraulic gantries aft.

Radar: Fire control: Drum Tilt.
Navigation: Don 2.
IFF: Two Square Head; one High Pole B.

Transfers: India (two in 1978, two in 1979 and two in 1980).



"NATYA" Class *1976*

49 "YURKA" CLASS (MINESWEEPERS—OCEAN)

Displacement, tons: 400 standard; 460 full load
Dimensions, feet (metres): 170·6 × 30·5 × 6·6 *(52 × 9·3 × 2)*
Guns: 4—30 mm (2 twin)
Mines: 10
Main engines: 2 diesels; 4 000 bhp; 2 shafts = 18 knots
Range, miles: 1 100 at 18 knots
Complement: 45

A class of medium fleet minesweepers with steel hull. Built from 1963 to 1972.

Radar: Fire control: Drum Tilt.
Navigation: Don 2.
IFF: Two Square Head; one High Pole B.

Transfers: Four to Egypt (1967), one to Viet-Nam (1979).

"YURKA" Class *1980*

65 "T 43" CLASS (MINESWEEPERS—OCEAN)

Displacement, tons: 500 standard; 580 full load (600 for *60 m* ships)
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)* (older units)
(196·8 *(60 m)* in later ships)
Guns: 2—37/63 mm (twin); 2—25 mm (twin); 4 MGs (twins) (not in older units)
A/S weapons: 2 DCTs
Mines: 20
Main engines: 2 Type 9D diesels; 2 shafts; 2 200 bhp = 14 knots
Range, miles: 3 000 at 10 knots
Complement: 65

Built in 1948-57 in shipyards throughout the Soviet Union. Steel hulls. The later version *(60 m* long/ carries the additional four 25 mm guns. A number of this class were converted into radar pickets (see below). The remainder are gradually being replaced by newer types of fleet minesweepers and at least half are probably in reserve. Of the 200+ hulls built a number were also used as diving ships, tenders etc. as well as a number employed by the KGB.

Radar: Search: Ball End.
Navigation: Neptun.
IFF: One Square Head; one High Pole A.

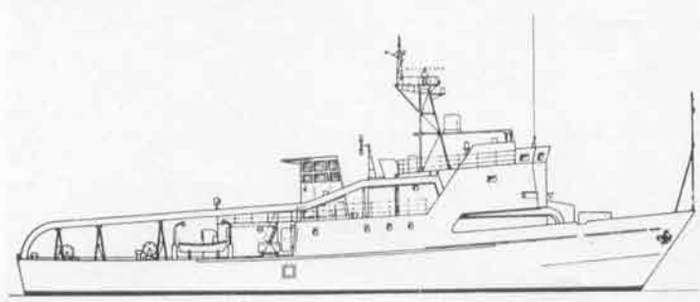
Transfers: Algeria (2), Albania (2), Bulgaria (3), China (2), Egypt (7), Indonesia (6), Iraq (2), Syria (2), 12 built in Poland for Polish navy.

"T 43" Class *1978*

3 + ? "ANDRYUSHA" CLASS (MINESWEEPERS—SPECIAL)

Displacement, tons: 360 full load
Dimensions, feet (metres): 147·3 × 26·8 × 6·5 *(44·9 × 8·2 × 2)*
Guns: None
Main engines: 2 diesels; 2 200 hp = 15 knots
Range, miles: 3 000 at 10 knots
Complement: 40

First entered service in 1975. Specially designed, possibly with GRP hulls, for deep water magnetic sweeping. Possibly carry a gas turbine generator.



"ANDRYUSHA" Class *1978*

35 "SONYA" CLASS (MINESWEEPERS—COASTAL/HUNTERS)

Displacement, tons: 350 standard; 400 full load
Dimensions, feet (metres): 159·1 × 23·9 × 6·2 *(48·5 × 7·3 × 1·9)*
Guns: 2—30 mm (twin); 2—25 mm (twin)
Mines: 5
Main engines: 2 diesels; 2 400 shp; 2 shafts = 18 knots
Complement: 43

Wooden hull. Now in series production at about three/four a year. First reported 1973.

Radar: Search/navigation: Don 2.
IFF: Two Square Head; one High Pole B.

"SONYA" Class *1976*

3 "ZHENYA" CLASS (MINESWEEPERS—COASTAL)

Displacement, tons: 220 standard; 330 full load
Dimensions, feet (metres): 140·1 × 25 × 6 *(42·7 × 7·6 × 1·8)*
Guns: 2—30 mm (twin)
Mines: 6
Main engines: 2 diesels; 2 400 shp; 2 shafts = 18 knots
Complement: 40

Reported to be a trial class for GRP hulls which may not have been successful as the "Sonya" class followed with wooden hulls. Probably built in late 1960s.

Radar: Search/navigation: Don 2.
IFF: Two Square Head; one High Pole B.

"ZHENYA" Class

69 "VANYA" CLASS (MINESWEEPERS—COASTAL/HUNTERS) and 3 "MODIFIED VANYA" CLASS

Displacement, tons: 200 standard; 245 full load
Dimensions, feet (metres): 131·2 × 23·9 × 5·9 *(40 × 7·3 × 1·8)*
Guns: 2—30 mm (1 twin); (2—25 mm (twin) in conversions in place of 30 mm)
Mines: 5
Main engines: 2 diesels; 2 200 bhp = 18 knots
Range, miles: 1 100 at 18 knots
Complement: 30

A coastal class with wooden hulls of a type suitable for series production built from 1961-73. The normal "Vanya" class can act as minehunters.

Conversion: Three have been modified with superstructure extended forward, with 25 mm mounting on foc'sle in place of 30 mm, lattice mast at break amidships and two boats stowed on quarterdeck. Guidance ships for "Ilyusha" class (following).

Radar: Navigation: Don 2; Don Kay in conversions.
IFF: One Square Head (unmodified); one High Pole B.

Transfers: Four to Bulgaria (1970-71) and two to Syria (1973).

"VANYA" Class *1975*

15 "SASHA" CLASS (MINESWEEPERS—COASTAL)

Displacement, tons: 250 standard; 280 full load
Dimensions, feet (metres): 147·9 × 20 × 6·6 *(45·1 × 6·1 × 2)*
Guns: 1—57 mm; 4—25 mm (2 twins)
Mines: 10
Main engines: 2 diesels; 2 200 bhp; 2 shafts = 18 knots
Complement: 25

Of steel construction. Built between 1956-63. Now phasing out.

Radar: Search: Ball End.
IFF: One High Pole; one Dead Duck.

"SASHA" Class *1976*

36 "YEVGENYA" CLASS (MINESWEEPERS—INSHORE)

Displacement, tons: 70 standard; 80 full load
Dimensions, feet (metres): 79 × 16·4 × 3·9 *(24·1 × 5 × 1·2)*
Guns: 2—14·5 mm (twin)
Main engine: 1 diesel; 850 hp = 12 knots
Range, miles: 1 000 at 9 knots
Complement: 10

GRP hulls. Production started in late 1960s.

Radar: Navigation: Don 2.
IFF: High Pole.

Transfers: Four to Bulgaria, five to Cuba, three to Iraq, one to Syria.

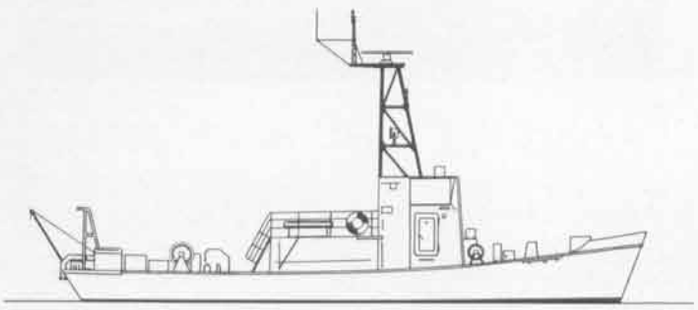
"YEVGENYA" Class *1979, G. Andrews*

10 "ILYUSHA" CLASS (MINESWEEPERS—INSHORE)

Displacement, tons: 80 full load
Dimensions, feet (metres): 86·6 × 19·4 × 4·6 *(26·4 × 5·9 × 1·4)*
Main engine: 1 diesel; 500 shp = 12 knots
Complement: 10

First laid down in 1971.
Large foremast carrying electronic arrays. Probably capable of operating unmanned and radio controlled. (See "Vanya" class above.)

Radar: Navigation: One Spin Trough.



"ILYUSHA" Class *1976, S. Breyer*

7 "OLYA" CLASS (MINESWEEPERS—INSHORE)

Displacement, tons: 50 standard; 60 full load
Dimensions, feet (metres): 73·8 × 14·8 × 4·6 *(22·5 × 4·5 × 1·4)*
Guns: 2—25 mm (twin)
Main engines: 2 diesels; 600 shp = 12 knots
Complement: 15

Built in mid-1970s.

Radar: Navigation: One Spin Trough.

10 "TR 40" CLASS (MINESWEEPING BOATS)

Displacement, tons: 50 standard; 70 full load
Dimensions, feet (metres): 92 × 13·5 × 2·3 *(28 × 4·1 × 0·7)*
Guns: 2—25 mm (twin); 2 MGs (twin)
Main engines: 2 diesels; 600 bhp = 16 knots
Complement: 16

Built in late 1950s. Being phased out.

40 "K 8" CLASS (MINESWEEPING BOATS)

Displacement, tons: 26 full load
Dimensions, feet (metres): 55·4 × 10·5 × 3·9 *(16·9 × 3·2 × 1·2)*
Guns: 2 MGs (twin)
Main engines: 2 diesels; 700 shp = 18 knots
Complement: 6

Built in Poland between 1954-59. Due for deletion shortly. Over half in reserve.

"K 8" Class

RADAR PICKETS

1 "T 58/AGR" CLASS

Details as in Light Forces. Fitted with Big Net radar.

11 "T 43/AGR" CLASS

Displacement, tons: 500 standard; 580 full load
Dimensions, feet (metres): 190·2 × 27·6 × 6·9 *(58 × 8·4 × 2·1)*
Guns: 4—37 mm (twins); 2—25 mm (twin)
Main engines: 2 diesels; 2 shafts; 2 200 bhp = 14 knots
Range, miles: 1 600 at 10 knots
Complement: 60

Former fleet minesweepers of the "T 43" class converted into air warning radar pickets.

Radar: Air search: Big Net or Knife Rest or Squat Eye.
Navigation: Don 2.

"T 43/AGR" Class (with Knife Rest radar) *8/1970*

"T 43/AGR" Class (with Squat Eye radar) *7/1977*

"T 43/AGR" Class (with Big Net radar) *1973, USN*

AMPHIBIOUS FORCES

1 + 1 "IVAN ROGOV" CLASS (LPDs)

IVAN ROGOV

Displacement, tons: 12 500 full load
Dimensions, feet (metres): 521·6 × 80·2 × 21·2—27·8 flooded
(159 × 24·5 × 6·5—8·5 flooded)
Aircraft: 3—5 Hormone helicopters
Missiles: SAM; 2—SA-N-4 (twin launcher)
Guns: 2—76 mm (twin); 4—30 mm Gatlings;
1—Rocket launcher BM-21 (naval) (2 × 20-barrelled)
Main engines: 2 gas turbines; 45 000 shp = 26 knots
Range, miles: 10 000 at 12 knots
Complement: 400

First appeared in 1978 having been built at Kaliningrad. Second building since 1979. Has bow ramp and rear doors opening into a docking bay 250 ft long. A helicopter spot forward has a flying-control station and the after helicopter deck and hangar is similarly fitted. With a capacity for a battalion of Naval Infantry (522), up to 20 tanks (40 if dock is used) as well as supporting vehicles this class provides a long range, long endurance assault capacity of far greater potential than any previous Soviet ship. Can carry up to three "Gus" class ACVs or two "Lebed" ACVs or one "Ondatra" class LCM in docking bay.

Radar: Search; Head Net C.
Fire control: Owl Screech, (76 mm); Bass Tilt (Gatlings); Pop Group (SA-N-4).
Navigation: Don Kay.
IFF: High Pole.

IVAN ROGOV *1978*

IVAN ROGOV *1980, US Navy*

11 "ROPUCHA" CLASS (LSTs)

Displacement, tons: 3 450 standard; 4 400 full load
Dimensions, feet (metres): 360 × 47·6 × 11·5 *(110 × 14·5 × 3·6)*
Guns: 4—57 mm (twins)
Main engines: 4 diesels; 10 000 shp; 2 shafts = 17 knots
Complement: 95

Built at Gdansk, Poland at a rate of about three a year. First completed 1975. A "roll-on-roll-off" design—all have very minor differences in appearance.
These ships have a higher troop-to-vehicle ratio than the "Alligator" class and thus the two provide a distant-ocean assault capability hitherto unavailable in the Soviet navy, now much enhanced by the arrival of the "Ivan Rogov" class.

Radar: Search: Strut Curve.
Fire control: Muff Cob.

"ROPUCHA" Class

Navigation: Don 2.
IFF: High Pole B.

Transfer: One to South Yemen in 1979.

"ROPUCHA" Class *1980, US Navy*

14 "ALLIGATOR" CLASS (LSTs)

Type 1
KRIMSKY KOMSOMOLETS
TOMSKY KOMSOMOLETS
VORONEZHSKY KOMSOMOLETS
+1

Type 2
SERGEI LAZO
+1

Type 3
ALEKSANDR TORTSEV
DONETSKY SHAKHTER
KRASNAYA PRESNYA
PYOTR ILICHEV
50 LET SHEFTSVA VLKSM
+1

Type 4
NIKOLAI FILCHENKOV
NIKOLAI VILKOV

Displacement, tons: 3 400 standard; 4 500 full load
Dimensions, feet (metres): 374 × 50·8 × 14·7 *(114 × 15·5 × 4·5)*
Guns: 2—57 mm (twin); 2 rocket launchers (Types 3 and 4); 4—25 mm (twin) (Type 4)
Main engines: 2 diesels; 9 000 bhp; 2 shafts = 18 knots
Range, miles: 11 000 at 15 knots
Complement: 100

First ship built in 1965-66 and commissioned in 1966. These ships have ramps on the bow and stern. Carrying capacity 1 700 tons. There are four variations of rig. In Type 1 two cranes are carried—other types have only one crane. In Type 3 the bridge structure has been raised and a forward deck house has been added to accommodate shore bombardment rocket launchers. Type 4 is similar to Type 3 with the addition of two twin 25 mm gun mountings on centre-line abaft the bridge superstructure. These ships operate regularly off West Africa and in the Mediterranean and the Indian Ocean, usually with Naval Infantry units embarked.

"ALLIGATOR 3" Class

"ALLIGATOR 1" Class

Missiles: *Petr Ilichev* now carries two SA-N-5 (Grail) launchers.

Radar: Fire control: Muff Cob (in some).
Navigation: One Don 2 or Spin Trough.

ALEXSANDR TORTSEV (Type 3) *11/1976*

52 "POLNOCHNIY" CLASS (LSMs)

Displacement, tons: Group A: 780 standard; 800 full load
Group B: 790 standard; 850 full load
Group C: 700 standard; 1 150 full load
Dimensions, feet (metres): Group A: 239·5 × 29·2 × 5·8 *(73 × 8·9 × 1·8)*
Group B: 249·3 × 29·2 × 5·8 *(76 × 8·9 × 1·8)*
Group C: 269 × 32·8 × 5·8 *(82 × 10 × 1·8)*
Guns: Group A: 2—14·5 mm or 2—25 mm or 2—30 mm; 2—140 mm rocket launchers
Group B: 2 or 4—30 mm (twins); 2—140 mm rocket launchers
Group C: 4—30 mm (twins); 2—140 mm rocket launchers
Main engines: 2 diesels; 5 000 shp = 18 knots (20 Group C)
Complement: 40

All Soviet ships built in Poland in 1963-72.
Carrying capacity 350 tons. Can carry six tanks.

Missiles: Some fitted with SA-N-5 (SA 7 Grail), four launchers each ship, eight missiles per launcher.

Radar: Group A: Drum Tilt in some; Don 2 or Spin Trough.
Group B: Drum Tilt; Don 2 or Spin Trough.
Group C: Drum Tilt and Don 2.

Transfers: From Soviet navy: Algeria (1), Angola (3), Egypt (3), Somalia (1), South Yemen (3), Viet-Nam (3).
From Poland: India (6), Indonesia (1), Iraq (4), Libya (4). In addition 23 built for the Polish Navy.

"POLNOCHNIY" Class (Group B)

"POLNOCHNIY" Class (Group B) *1974, S. Breyer*

"POLNOCHNIY" Class (Group A) with 2—30 mm before bridge

"POLNOCHNIY" Class (Group C) (fitted with four Grail launchers) *8/1978*

5 "MP 4" CLASS (LSMs)

Displacement, tons: 620 standard; 780 full load
Dimensions, feet (metres): 183·7 × 26·2 × 8·9 *(56 × 8 × 2·7)*
Guns: 4—25 mm (2 twin) in some
Main engine: 1 diesel; 1 100 bhp = 10 knots
Complement: 50

Built in 1956-58. Of the small freighter type in appearance. Two masts, one abaft the bridge and one in the waist. Gun mountings on poop and forecastle. Can carry six to eight tanks. All in reserve.

Deletions: The other "MP" classes—MP 2, 6, 8 and 10—are now reported as deleted, although some may be used as transports.

Radar: Don.

"MP 4" Class *1973, J. Rowe*

20 "VYDRA" CLASS (LCUs)

Displacement, tons: 425 standard; 600 full load
Dimensions, feet (metres): 179·7 × 26·6 × 6·6 *(54·8 × 8·1 × 2)*
Main engines: 2 diesels; 2 shafts; 800 hp = 11 knots

Built from 1967-69. No armament. Carrying capacity 250 tons. Ten in reserve.

Radar: Navigation: Spin Trough.
IFF: High Pole.

Transfers: 18 to Bulgaria, ten to Egypt.

"VYDRA" Class *1978*

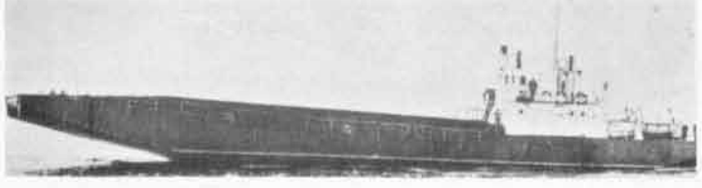
15 "SMB 1" CLASS (LCUs)

Displacement, tons: 180 standard; 340 full load
Dimensions, feet (metres): 159·1 × 21·3 × 6·6 *(48·5 × 6·5 × 2)*
Main engines: 2 diesels; 600 hp = 10 knots
Complement: 16

Built in 1960-65. Capacity 180 tons. About half in reserve.

Radar: IFF: High Pole.

Transfers: Five to Egypt.

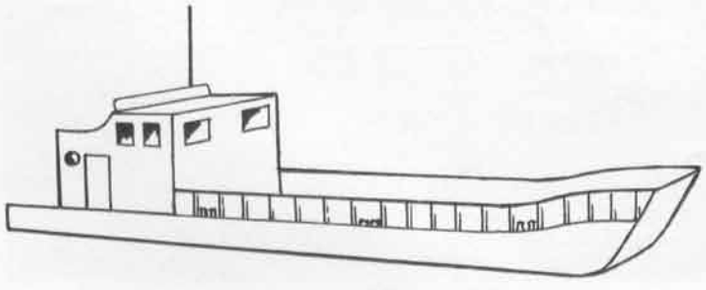


"SMB 1" Class *1971*

6 "ONDATRA" CLASS (LCMs)

Displacement, tons: 145 full load
Dimensions, feet (metres): 78·7 × 19·7 × 4·9 *(24 × 6 × 1·5)*
Main engines: 2 diesels = 10 knots

Built in late 1970s—associated with *Ivan Rogov*. Can carry one tank.



"ONDATRA" Class

"T 4" CLASS (LCMs)

Some of this old class of 70 tons and 10 knots still exist.

AUXILIARY AMPHIBIOUS SHIPS

Note: The rapid expansion of the Soviet general cargo fleet that took place in the late 1960s and early 1970s has been followed in recent years by a similar expansion in specialist tonnage of types directly of value to naval support or amphibious activities.
The integrated command structure controlling all merchant ship activities, which has naval staff at each separate "company" office and a core of naval personnel on each ship, has for many years enabled individual merchant ships, especially tankers, to be re-routed from normal commercial trading to act as fleet support ships.
No apologies are made for including in a warship reference book vessels that require only a coat of grey paint to transform them into effective and well equipped naval units. Most of the ships listed have sophisticated communication equipment far beyond that required for commercial purposes, SIGINT and ELINT antennae are commonplace, photographic laboratories are a standard fit and the construction is up to naval standards.
Experience in operating medium-sized ro-ro vessels was gained with the Finnish built "Inzhener Mekhanik" class and the very similar French built "Akademik" class, before the domestically produced "Ivan Skuridin" class appeared. Built at the Zhdanov yard in Leningrad, these ships use mainly Soviet-built fittings and equipment and show strong naval influence.
In a similar manner experience was gained in the larger sizes with the Finnish built "Magnitogorsk" class and the series produced Polish "Skulptor" class. *Kapitan Smirnov* then appeared, based on the experience thus gained. This pattern is being followed with the "Stakhanovets" class ro-flow ships, and the "Yulius Fuchik" barge carriers.
In general, Soviet merchant ships are notable for their extremely long range and, in addition to the equipment previously mentioned, carry comprehensive self-repair facilities together with the necessary technicians to carry out such work. Various degrees of NBC protection can be seen along with other equipment suitable for a wartime role.

2 BARGE CARRIERS

YULIUS FUCHIK (1978)
TIBOR SZAMUELY (1979)

Measurement, tons: 35 877 gross; 37 850 deadweight
Dimensions, feet (metres): 873·9 × 11·3 × 36·1 *(266·4 × 3·5 × 11)*
Main engines: 2 Pielstick diesels; 36 000 hp = 20 knots
Range, miles: 12 000

Built by Valmet Oy, Helsinki. Stern door with barge-lift to carry twenty-six 1 300-ton barges or 1 552 TEU (20 ft equivalent units). The lift handles barges in pairs. Can be used in ro-ro configuration using flat-topped pontoon or removable ramps with a loading of 22 tons per axle. Design based on Lykes Seabee ships.

3 RO-FLOW SHIPS

STAKHANOVETS KOTOV (1978)
STAKHANOVETS YERMOLENKO (1978)
STAKHANOVETS PETRAS (1979)

Measurement, tons: 4 026 gross; 5 710 deadweight; 1 200 net
Dimensions, feet (metres): 457·5 × 66·2 × 20·7 *(139·5 × 20·2 × 6·3)*
Main engines: 2 Wärtsilä Pielstick diesels; 6 420 hp = 14·5 knots

Built by Hollming Oy, Rauma, Finland.
Have two 350 ton cranes, one 1 400 ton barge, two 350 ton 64 wheel transporters with a 295·2 × 44·4 ft *(90 × 13·6 m)* floodable dock, with stern door/ramp. Ramp is strengthened for 300 tonne loads, deck load 5·7 tonnes/m².
Hatch covers strengthened to carry 1.75 tonnes/m². Capable of carrying landing craft, light forces craft, hovercraft etc and launching these without port facilities.

STAKHANOVETS KOTOV *1978, Michael D. J. Lennon*

3 "KAPITAN SMIRNOV" CLASS (RO-RO SHIPS)

KAPITAN SMIRNOV (1979) **KAPITAN MEZENTSEV** (1980) **+1** (1981)

Measurement, tons: 14 345 gross; 20 075 deadweight; 7 475 net
Dimensions, feet (metres): 745·5 × 98·4 × 32·5 *(227·3 × 30 × 9·9)*
Main engines: COGAS; 2 gas turbines; 50 000 hp = 25 knots
Range, miles: 25 000
Complement: 47 (plus 8 passengers)

Built by Chernomorsky yard, Nikolayev.
Have starboard quarter door with internal ramps and flush hatches forward.

Engineering: The aircraft-derived gas turbines use 300 second Redwood marine diesel and, in a unique arrangement, exhaust to waste-heat boilers which produce steam for turbines which can be clutched to provide 20 per cent of the propulsive power and also supply steam for turbo-alternators and ship services.

4 "MAGNITOGORSK" CLASS (RO-RO ships)

MAGNITOGORSK (1976)
KOMSOMOLSK (1976)
ANATOLY VASILYEV (1981)
+1

Displacement, tons: 37 502 full load
Measurement, tons: 15 709 gross; 22 691 deadweight; 7 613 net
Dimensions, feet (metres): 674·9 × 101·7 *(205·8 × 31)*
Main engines: 2 Burmeister & Wain diesels; 23 000 hp = 18·5 knots
Range, miles: 30 000

Speed sometimes reported as 21 knots.
Built by Valmet Oy, Helsinki first pair in 1976.
Two further modified ships ordered 1979, 27 000 hp = 22 knots. *Anatoly Vasilyev* launched 26 September 1980.
The original pair have a 60 ton starboard quarter ramp and internal ramps. Decks can support axle loading of 52 tonnes. Available lane length of 3·75 miles gives space for 1 085 trucks or 1 368 TEU (20 ft equivalent units).

10 + 3 (+3) "IVAN SKURIDIN" CLASS (RO-RO SHIPS)

IVAN SKURIDIN (1975)
YURI SMIRNOV (1975)
GAVRIL KIRDISHCHEV (1976)
NIKOLAI VILKOV (1977)
ZNAMYA OKTYABRYA (1978)
IVAN DERBENEV (1978)
BORIS BUVIN (1978)
ALEKSANDR OSIPOV (1979)
TIMUR FRUNZE (1979)
YEKATERINA ZELENKO (1980)

Measurement, tons: 3 954 gross; 4 600 deadweight; 1 531 net
Dimensions, feet (metres): 458·4 × 62·9 × 21·6 *(139·6 × 19·2 × 6·6)*
Main engine: Bryanah-Burmeister & Wain; 6 700 hp = 17 knots
Range, miles: 5 000

Built at A. A. Zhdanov Yard, Leningrad. First Soviet built ro-ro ships.
Bow visor door with swivelling ramp of 65 tonnes capacity which can operate in a 90 degree arc across the bow. Deck pillars have been eliminated giving an unobstructed deck space without sheer or camber. Scissor type internal lift and ramp to upper deck. The great majority of fittings and equipment are of Soviet make.

GAVRIL KIRDISHCHEV *1978, Michael D. J. Lennon*

2 HAMLET-MULTIFLEX TYPE (RO-RO SHIPS)

IZVESTIYA (1978)
KNUD JESPERSEN (1979)

Measurement, tons: 9 623 gross; 13 000/12 600 deadweight; 7 435/6 355 net
Dimensions, feet (metres): 436·3 × 67·1 × 30·8 *(133 × 20·5 × 9·4)*
Main engines: 2 Burmeister & Wain Alpha diesels; 6 360 bhp = 16·5 knots
Range, miles: 10 000

Combination ro-ro general carriers. Stern door and quarter ramps. Two 35 ton cranes.
Built by Burmeister and Wain, Copenhagen.

KNUD JESPERSEN *1980, Michael D. J. Lennon*

6 "SKULPTOR" CLASS (RO-RO SHIPS)

SKULPTOR KONENKOV (1976)
SKULPTOR VUCHETITCH (1976)
SKULPTOR GOLUBKINA (1977)
SKULPTOR ZALKALNS (1978)
NIKOLAI CHERKASOV (1979)
AGOSTINHO NETO (ex-*Boris Limanov*) (1980)

Measurement, tons: 12 718 gross; 18 641 deadweight; 5 618 net
Dimensions, feet (metres): 596·6 × 92·5 × 31·5 *(181·9 × 28·2 × 9·6)*
Main engines: 2 Sulzer 16ZVB40/48 diesels; 20 800 hp = 19 knots
Range, miles: 20 000

Built by Stocznia, Gdansk. Polish B 481 type. Have 60 ton quarter ramp starboard and internal ramps. Space for 625 trucks or 772 TEU (20 ft equivalent units). Permissible deck load 2·7 tons/m² or 55 tons per axle.

SKULPTOR KONENKOV *1980, Michael D. J. Lennon*

10 "INZHENER/MEKHANIK" CLASS (RO-RO SHIPS)

GROUP 1
INZHENER MACHULSKY (1975)
INZHENER BASHKIROV (1975)
INZHENER SUKHORUKOV (1975)
INZHENER KREILIS (1976)
MEKHANIK KONOVALOV (1976)

GROUP 2
INZHENER NECHIPORENKO (1976)
MEKHANIK TARASOV (1976)
MEKHANIK FEDOROV (1977)
MEKHANIK GERASIMOV (1977)
MEKHANIK YEVGRAFOV (1977)

Measurement, tons: 4 009/4 262 gross; 5 306/6 128 deadweight; 1 594/1 767 net
Dimensions, feet (metres): Group 1: 407·4 × 63 × 20·7 *(124·2 × 19·2 × 6·3)*
Group 2: 405·9 × 63 × 20·7 *(123·6 × 19·2 × 6·3)*
Main engines: 2 Wärtsilä-Pielstick diesels; 8 000 hp = 16·5 knots
Range, miles: 5 000

Group 1 ships have starboard quarter ramp and internal ramps.
Group 2 ships have stern doors and internal lifts.
Built by Hollming Oy, Rauma.

INZHENER BASHKIROV *1978, Michael D. J. Lennon*

6 "AKADEMIK" CLASS

AKADEMIK KUPREVICH (1975)
AKADEMIK ARTSIMOVICH (1975)
AKADEMIK GUBER (1975)
AKADEMIK MILLIONSCHIKOV (1975)
AKADEMIK STECHKIN (1975)
AKADEMIK TUPOLEV (1975)

Measurement, tons: 3 244 gross; 4 267 deadweight
Dimensions, feet (metres): 390·4 × 63·5 × 19 *(119 × 19·4 × 5·8)*
Main engines: Ch de l'Atlantique-Pielstick; 9 100 bhp = 17 knots
Range, miles: 6 000

Starboard quarter ramps and internal ramps. Deck loading 3 tons/m² with individual vehicles up to 50 tons.
Built by Cons. Nav. et Ind. de la Mediterranee, La Seyne in 1975.

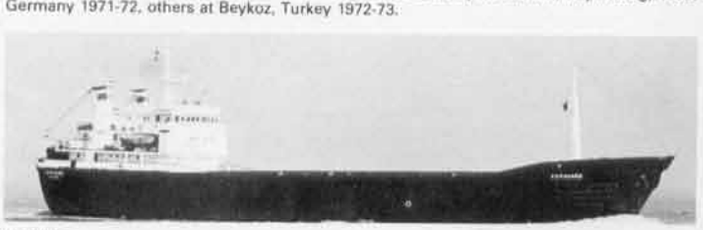
AKADEMIK KUPREVICH *11/1979, Selçuk Emre*

5 FDR TYPE

HEINLAID (1971)
VIIRELAID (1972)
KESSULAID (1972)
SUURLAID (1972)
MANILAID (1973)

Measurement, tons: 964 gross; 1 506 deadweight; 567 net
Dimensions, feet (metres): 263 × 42 × 13·8 *(80·2 × 12·9 × 4·2)*
Main engines: 2 Burmeister & Wain Alpha diesels; 2 000 hp = 14 knots

Ex-West German ships purchased 1974-75. First two built by H. Surken, Papenburg, West Germany 1971-72, others at Beykoz, Turkey 1972-73.



HEINLAID *1/1980, L. and L. van Ginderen*

5 PASSENGER/VEHICLE FERRIES

BYELORUSSIYA (1975)
GRUZIYA (1975)
AZERBAIDZHAN (1976)
KARELIYA (1976)
KAZAKHSTAN (1976)

Measurement, tons: 16 631 gross; 2 402 deadweight; 7 812 net
Dimensions, feet (metres): 501·9 × 71·2 *(153 × 21·8)*
Main engines: Wärtsilä Pielstick; 18 000 bhp = 21 knots

Bow-side and stern doors; current layout—504 berthed, 505 unberthed passengers. Vehicle deck strengthened. Built by Wärtsilä Oy, Turku.

Other passenger/vehicle ferries, which include icebreaking ferries, are in series production. The newest class, Polish B493 type, of 9 800 tons gross and 22 knots was begun with *George Ots* and *Dmitri Skostakovich*.

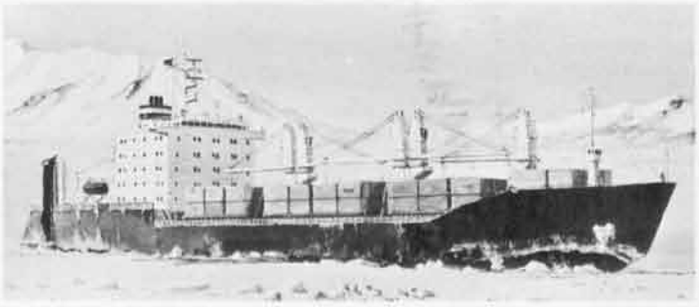
BYELORUSSIYA *1980, Michael D. J. Lennon*

0 + 6 WÄRTSILÄ and 0 + 3 VALMET ARCTIC-COMBI SHIPS

Measurement, tons: 20 000 deadweight (max); 14 700 (Arctic at 29·5 ft draught)
Dimensions, feet (metres): 570·7 × 80·4 × 29·5 (Arctic) *(174 × 24·5 × 9)*
Main engines: 2 Wärtsilä-Sulzer 14 ZV-40/48 diesels (Wärtsilä ships); 21 000 hp; 1 shaft (cp propeller) = 17 knots
Complement: 39 (plus 12 passengers)

Ordered by Sudoimport in July 1980 for delivery in 1982-83, the Wärtsilä ships being built at Perno. All-purpose Arctic transports capable of operating in −50°C, fitted with ro-ro capability and designed to load and unload directly on to the ice. Have two decks, five holds and a stern ramp to starboard (16·5 ft door). Fitted with air-bubbling equipment. Five 40 ton cranes.

Capacity: 28 000 m³ hold space plus space for 500 TEU (20 ft equivalent units) plus ro-ro capability.



"ARCTIC-COMBI" SHIP *7/1980, Wärtsilä*

Notes: (a) Reports exist of a large number of small ro-ro vessels being planned. Similar to landing craft, these vessels are believed to be designed for supplying stores to remote bases.
(b) On order from Stocznia, Gdansk are two 21 650 deadweight, 23 knot, 738 × 100 ft *(225 × 30·5 m)* stern loading ro-ro ships of B 480 type.
(c) Blue Funnel Line ro-ro *Ixion* and *Jason* purchased 1978 and renamed *Kapitan Tomson* and *Kapitan Yakovlev*. Built Japan 1977, 4 633 tons gross, 7 242 deadweight and capable of 15 knots.

AIR CUSHION VEHICLES

(Fuller details appear in the latest *Jane's Surface Skimmers*)

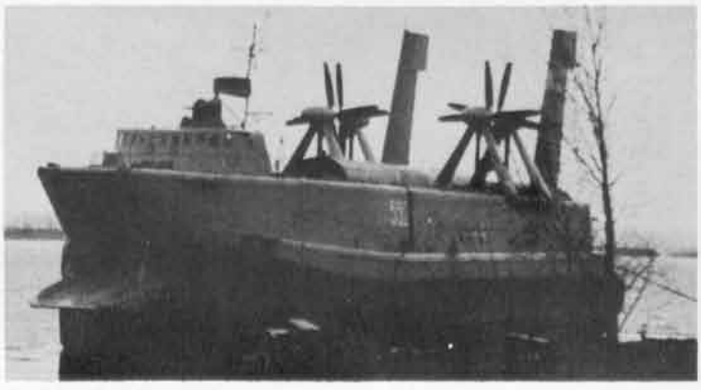
12 "AIST" CLASS

525 **527** **529** **530** **+8**

Operating weight: 220 tons
Dimensions, feet (metres): 156·8 × 57·4 *(47·8 × 17·5)*
Guns: 4—30 mm (twin)
Main engines: 2 gas turbines driving four axial lift fans and four propeller units for propulsion; 3 120 hp
Speed, knots: 65

Currently in production at Leningrad for Naval Infantry. Is the first large Soviet hovercraft for naval use. Similar to British SR.N4. Can carry five light tanks or four light tanks and 150 troops.

Radar: One Spin Trough; one Drum Tilt.
IFF: High Pole B; Square Head.



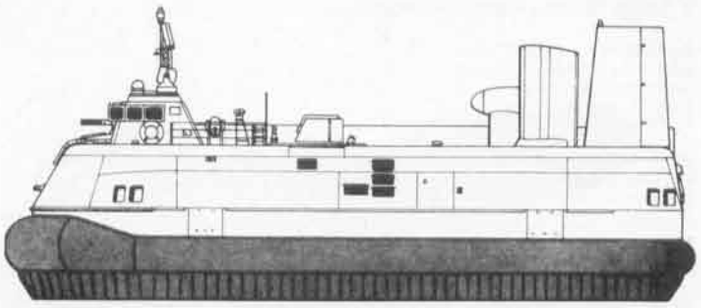
"AIST" Class (prototype) *1978*

"AIST" Class *1977*

10 "LEBED" CLASS

Operating weight: 87 tons
Dimensions, feet (metres): 82 × 36·1 *(25 × 11)*
Guns: 2—30 mm (twin) in some
Propulsion: 2—AI-20 gas turbines for lift and propulsion; 7 200 shp
Speed, knots: 55

At least two can be carried in *Ivan Rogov*. Can carry two light tanks or 40 tons of cargo or 120 troops. Have a bow ramp with guns on port side.



"LEBED" Class *Jane's Surface Skimmers*

33 "GUS" CLASS

715 732 +31

Operating weight: 27 tons
Dimensions, feet (metres): 70 × 24 *(21·4 × 7·3)*
Propulsion: 2—780 hp marine gas turbines (vp and reversible propellers)
Lift: 1—780 hp marine gas turbine
Speed, knots: 58
Range, miles: 230 cruising

This is a naval version of a passenger carrying design *(Skate)*. Can carry 25 troops and equipment. In production for Naval Infantry. Deployed to all fleets except Northern.

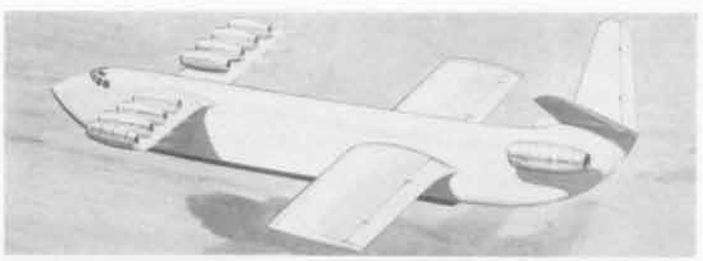
Radar: Navigation: Spin Trough.

"GUS" Class *1978*

EKRANOPLAN CRAFT (WIG)

Dimensions, feet (metres): 400 × 125 (approx wing span) *(122 × 38)*
Propulsion: 10 gas turbines
Speed, knots: 300 approx

An experimental craft, a wing-in-ground-effect machine, with a carrying capacity of about 900 troops and with potential for a number of naval applications such as ASW, minesweeping or patrol. Claimed to be capable of operations in heavy weather as well as crossing marshes, ice and low obstacles. Several other prototypes of unknown characteristics exist.
On take-off the forward engines are temporarily angled down with propulsion from the after pair.



EKRANOPLAN *Jane's Surface Skimmers*

SUPPORT AND DEPOT SHIPS

1 + ? NEW CONSTRUCTION (SUBMARINE DEPOT SHIP)

Displacement, *tons: 19 000 tons approx

First of class completed 1980. Probably to service later SSBNs.

7 "UGRA" CLASS (SUBMARINE DEPOT SHIPS); 2 (TRAINING SHIPS)

BORODINO*
GANGUT*
IVAN KOLYSHKIN
IVAN KUCHERENKO
IVAN VAKHRAMEEV
TOBOL
VOLGA
+2
*Training

Displacement, tons: 6 750 standard; 9 500 full load
Dimensions, feet (metres): 463·8 × 58·1 × 21·3
(141·4 × 17·7 × 6·5)
Aircraft: 1 helicopter
Guns: 8—57 mm (twins)
Main engines: 4 diesels; 2 shafts; 14 000 bhp = 20 knots
Range, miles: 10 000 at 12 knots
Complement: 300

Improved versions of the "Don" class. Equipped with workshops. Provided with a helicopter platform and, in *Ivan Kolyshkin* (last of class), a hangar. Has mooring points in hull about 100 ft apart, and has baggage ports for coastal craft and submarines. The eighth and ninth ships of this class *(Borodino* and *Gangut)* mount a large superstructure from the mainmast to quarter-deck and are used for training.
Built at Nikolayev from 1962 to 1972.

BORODINO (Training Ship) *1978*

Aerials: *Volga* and some others have lattice mainmast with Vee-cone HF aerial.

Cranes: No bow lift. Two 10 ton and two 5 ton cranes.

Radar: Search: Strut Curve.
Fire control: Two Muff Cob.
Navigation: Don 2.
IFF: Two Square Head; one High Pole A.

Soviet type name: Plavuchaya baza meaning floating support centre.

Transfer: *Amba*, (sixth of class) which had four 76 mm guns, was transferred to India in 1969.

IVAN KOLYSHKIN *1980, MOD*

6 "DON" CLASS (SUBMARINE DEPOT SHIPS)

DMITRI GALKIN
FYODOR VIDYAYEV
KAMCHATSKY KOMSOMOLETS (ex-*Mikhail Tukhachevsky*)
MAGADANSKY KOMSOMOLETS
MAGOMED GADZHIEV
VIKTOR KOTELNIKOV

Displacement, tons: 6 730 standard; 9 000 full load
Dimensions, feet (metres): 449·4 × 55·1 × 22·3
(137 × 16·8 × 6·8)
Aircraft: Provision for helicopter in two ships
Guns: 4—3·9 in *(100 mm)* (singles);
8—57 mm (twins) (see notes)
Main engines: 4 diesels; 14 000 bhp; 2 shafts
Speed, knots: 21
Range, miles: 10 000 at 12 knots
Complement: 300

Originally seven ships were built in 1957 to 1962, all in Nikolayev. Quarters for about 450 submariners.

Aircraft: In *Viktor Kotelnikov* Y-gun has been removed to provide space for a helicopter platform. *Magadansky Komsomolets* was built with a similar platform.

Communications: Vee Cone fitted in *Dmitri Galkin* and *Fyodor Vidyayev* for long range communications.

Cranes: Have a 100 ton bow lift and two 10 ton cranes and two 5 ton.

Gunnery: In *Fyodor Vidyayev* now only two 3·9-in. In *K. Komsomolets* no 3·9-in mounted. Eight 25 mm (twin) are mounted in *Dmitri Galkin* and *Fyodor Vidyayev* in addition.

Radar: Search: Slim Net; possibly Strut Curve in some.
Fire control: Hawk Screech (not in *D. Galkin* and *F. Vidyayev*).
Navigation: Neptun.
IFF: Two Square Head, one High Pole.

Soviet type name: Plavuchaya baza meaning floating support centre.

Transfers: One to Indonesia in 1962.

"DON" Class

FYODOR VIDYAYEV with Vee-Cone HF aerial on mainmast *1977, MOD*

5 "DNEPR" CLASS (SUBMARINE TENDERS)

PM 17, 22, 30, 130, 135

Displacement, tons: 4 500 standard; 5 250 full load
Dimensions, feet (metres): 370·7 × 54·1 × 14·4 *(113 × 16·5 × 4·4)*
Main engine: 1 diesel; 2 000 bhp = 12 knots
Range, miles: 6 000 at 8 knots
Complement: 376

Bow lift repair ships for S/M support and maintenance. Built in 1960-64 at Nikolayev and equipped with workshops and servicing facilities. The last two ships of this class with flush-decked hull form the "Dnepr II" class. All unarmed.

Radar: Navigation: Don or Don 2.
IFF: One High Pole.

Soviet type name: Plavuchaya masterskaya meaning floating workshop.

"DNEPR I" Class *1974*

7 "LAMA" CLASS (MISSILE SUPPORT SHIPS)

GENERAL RYABIKOV, PM 44, PM 93, PM 131, PM 150, PM 625 +1

Displacement, tons: 5 000 standard; 7 000 full load
Dimensions, feet (metres): 370× 49·2 × 14·4
(112·8 × 15 × 4·4)
Guns: 8—57 mm, (2 quad, 1 on the forecastle, 1 on the break of the quarter deck) (in 2 ships);
4—57 mm (quad) (in one ship);
2—57 mm; 4—25 mm (in two ships);
2—57 mm (in one ship)
Main engines: 2 diesels; 2 shafts; 5 000 shp
Speed, knots: 15
Complement: 250

Built between 1963 and 1972 with seventh ship in 1979.
The engines are sited aft to allow for a very large and high hangar or hold amidships for carrying missiles or weapons' spares for submarines, surface ships and missile craft. This is about 12 ft high above the main deck. There are doors at the forward end with rails leading in and a raised turntable gantry or 20 ton travelling cranes for armament supply. Variations in armament may reflect differences in missile stowage.
There are mooring points along the hull for ships of low freeboard such as submarines to come alongside. The well deck is about 40 ft long, enough for most missiles to fit horizontally before being lifted for loading.
There are several differences in midships superstructure in these ships.

Names: Only the last of this class has been named.

Radar: Search: One Slim Net or Strut Curve.
Fire control: Two Hawk Screech or Muff Cob.
Navigation: One Don 2.
IFF: Two Square Head; one High Pole A.

"LAMA" Class

"LAMA" Class *8/1979, US Navy*

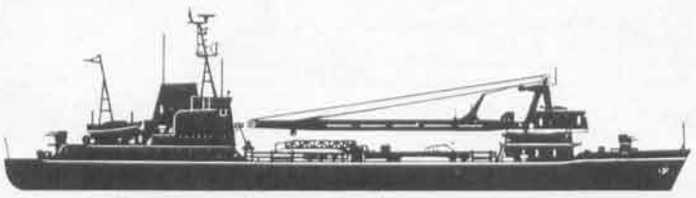
2 + 1 "AMGA" CLASS (MISSILE SUPPORT SHIPS)

AMGA **VETLUGA**

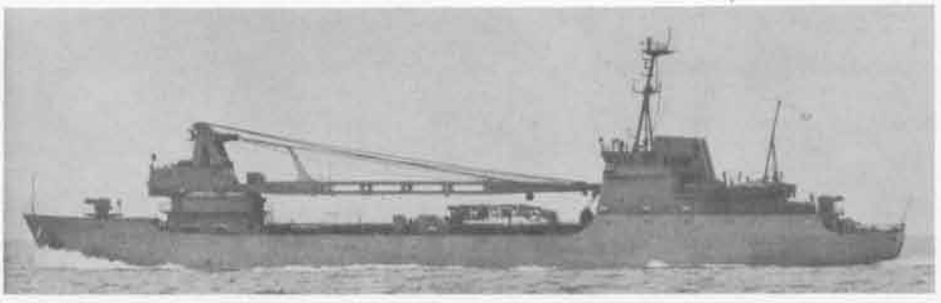
Displacement, tons: 4 800 standard; 5 800 full load
Dimensions, feet (metres): 334·5 × 59 × 14·8 *(102 × 18 × 4·5)*
Guns: 4—25 mm (twins)
Main engines: 2 diesels; 2 shafts; 9 000 hp = 16 knots
Complement: 210

Ships with similar duties to the "Lama" class. May be distinguished from those ships by the break at the bridge, giving a lower freeboard than that of the "Lama" class. Fitted with a large 50 ton crane forward and thus capable of handling much larger missiles than their predecessors. Probably, therefore, designed for servicing submarines, particularly those armed with SS-N-8 missiles and others of equal size. First appeared in December 1972 and the second in 1976. One building.

Radar: Search: Strut Curve.
Navigation: One Don 2.
IFF: High Pole B.



"AMGA" Class



"AMGA" Class *1976*

2 "MODIFIED ANDIZHAN" CLASS (MISSILE SUPPORT SHIPS)

VENTA **VILYUI**

Displacement, tons: 3 500 standard; 4 200 full load
Dimensions, feet (metres): 341·1 × 47·2 × 13·4 *(104 × 14·4 × 4·1)*
Main engine: 1 diesel; 2 500 shp = 13 knots
Range, miles: 6 000 at 13 knots
Complement: 98

Cargo ships built in late 1950s. Converted to support ships 1974-75. Have one main crane forward, two smaller cranes aft and a helicopter platform.

Radar: Navigation: Two Don 2.
IFF: Two Square Head; one High Pole.

VENTA *1978*

"AMUR" Class (PM 138) *3/1980, US Navy*

12 "OSKOL" CLASS (REPAIR SHIPS)

PM 20, 21, 24, 26, 28, 51, 68, 146, 148, 447 +2

Displacement, tons: 2 500 standard; 3 000 full load
Dimensions, feet (metres): 282·1 × 37·7 × 14·4 *(86 × 11·5 × 4·4)*
Guns: (See notes)
Main engines: 2 diesels; 2 shafts; 4 800 hp = 16 knots
Complement: 100

Three series: "Oskol I" class, well-decked hull, no armament; "Oskol II" class, well-decked hull, armed with two 57 mm guns (one twin) and four 25 mm guns (two twins); "Oskol III" class, flush-decked hull. No armament. General purpose tenders and repair ships with one or two 3·5-ton cranes. Built from 1963 to 1970 in Poland.

Radar: Fire control: Muff Cob (In "Oskol II").
Navigation: One Don 2.
IFF: One High Pole.

19 "AMUR" CLASS (REPAIR SHIPS)

PM 9, 34, 40, 49, 52, 56, 64, 73, 81, 94, 129, 138, 139, 140, 156, 161, 164 +2

Displacement, tons: 5 000 standard; 6 500 full load
Dimensions, feet (metres): 377·3 × 57·4 × 18 *(115 × 17·5 × 5·5)*
Main engines: 2 diesels; 10 000 shp; 1 shaft = 20 knots
Complement: 220

General purpose depot ships built since 1968 in Szeczin, Poland. Successors to the "Oskol" class. Carry two 5-ton cranes.

Radar: Navigation: One Don 2.

"OSKOL" Class

"AMUR" Class

"OSKOL" Class *1975*

4 "TOMBA" CLASS (SUPPORT SHIPS)

ENS 244, 254, 348, 357

Displacement, tons: 3 500 standard; 4 900 full load
Dimensions, feet (metres): 316·5 × 50·8 × 16·4 *(96·5 × 15·5 × 5)*
Main engine: 1 diesel; 6 000 shp; 1 shaft = 18 knots
Complement: 180

First completed 1974. Deployed in Northern Fleet and Pacific. Their type name is an indication of their tasks.
After funnel serves propulsion diesel, forefunnel serves the auxiliaries and there is a donkey funnel on fo'c's'le. Two 3 ton cranes.

Radar: Navigation: Don 2.
IFF: High Pole.

Soviet type name: Elektrostantsiye nalivatelnoye sudno meaning electricity supply ship.

"TOMBA" Class

"TOMBA" Class *6/1978, Gerhard Koop*

8 "VYTEGRALES" CLASS

APSHERON (ex-*Vagales*)
BASKUNCHAK (ex-*Kirishi*)
DAURIYA (ex-*Vyborgles*)
DIKSON (ex-*Vostok 3*)
DONBAS (ex-*Vostok 4*)
SEVAN (ex-*Svirles*)
TAMAN (ex-*Suzdal*)
YAMAL (ex-*Tosnoles*)

Displacement, tons: 4 900 standard; 5 970 full load
Dimensions, feet (metres): 400·3 × 55·1 × 22·3 *(122·1 × 16·8 × 6·8)*
Main engine: 1 Burmeister and Wain diesel; 5 200 hp; 1 shaft = 16 knots
Complement: 46

Standard timber carriers of a class of 27. These eight ships were modified with helicopter flight deck. Built at Zhdanov Yard, Leningrad between 1963 and 1966.
Used as support ships in the Indian Ocean.

Class name: The first of class, completed in 1962, was originally *Vytegrales,* but this was later changed to *Kosmonaut Pavel Belyayev* and remains a merchant ship. Since these eight and the four others of the same class (but civilian manned) have been taken over from the merchant marine they have been variously, but incorrectly, called "Vostok", "Baskunchak" etc.

Communications: Two Vee Cone.

Radar: Two Don 2.

TAMAN *1978, Selçuk Emre*

INTELLIGENCE COLLECTORS (AGIs)

Notes: (a) About half the AGIs are fitted with SA-N-5 (Grail)
(b) SSV in pennant numbers of some AGIs could be a contraction of sudno svyazy meaning communications vessel
(c) GS in pennant numbers of some AGIs is a contraction of gidrograficheskoye sudno meaning survey ship.

1 "BALZAM" CLASS

BALZAM SSV 516

Displacement, tons: 4 000 full load
Dimensions, feet (metres): 344·4 × 47·6 × 14·8 *(105 × 14·5 × 4·5)*
Missiles: SAM; 2—SA-N-5 (Grail)
Gun: 30 mm Gatling
Main engines: 2 diesels; 9 000 hp = 20 knots
Complement: 180

First of a new class, completed in 1980, notable for twin radomes. The first AGI to be armed.

BALZAM *1980, MOD*

6 "PRIMORYE" CLASS

PRIMORYE SSV 501
KAVKAZ SSV 591
KRIM
ZABAIKALYE SSV 464
ZAKARPATYE
ZAPOROZHIYE

Displacement, tons: 3 400 standard; 4 500 full load
Dimensions, feet (metres): 274 × 45 × 26·2 *(83·6 × 13·7 × 8)*
Main engines: 2 diesels; 4 000 shp = 12 knots
Complement: 117

Apparently have a built-in processing and, possibly, analysis capability. Built to the same hull design as the "Mayakovsky" class of stern trawlers.

PRIMORYE *8/1979, MOD*

3 "NIKOLAI ZUBOV" CLASS

GAVRIL SARYCHEV (mod)
KHARITON LAPTEV
SEMEN CHELYUSKIN SSV 461

Displacement, tons: 2 674 standard; 3 021 full load
Dimensions, feet (metres): 294·2 × 42·7 × 15 *(89·7 × 13 × 4·6)*
Main engines: 2 diesels; 5 300 shp; 2 shafts = 18 knots
Range, miles: 11 000 at 14 knots
Complement: 50

Built in Poland. Similar class operate as survey ships. *G. Sarychev* now has additional superstructure.

KHARITON LAPTEV *8/1978, MOD*

2 "MODIFIED PAMIR" CLASS

SSV 480 (ex-*Gidrograf*)
PELENG

Displacement, tons: 1 443 standard; 2 240 full load
Dimensions, feet (metres): 256 × 42 × 13·5 *(78 × 12·8 × 4·1)*
Main engines: 2—4 stroke diesels; 2 shafts; 4 200 bhp = 17 knots
Range, miles: 21 000 at 12 knots
Complement: 72

Built in Sweden 1959-60. Originally salvage tugs and have higher deckhouse abaft bridge than other ships of class.

SSV 480 *11/1980*

9 "MOMA" CLASS

SSV 512 (mod) (ex-*Arkhipelag*)
EKVATOR
ILMEN
KILDIN
NAKHODKA SSV 506
PELORUS (mod)
SELIGER (mod) SSV 504
VEGA
YUPITER (mod)

Displacement, tons: 1 200 standard; 1 700 full load
Dimensions, feet (metres): 219·8 × 34·4 × 13·1 *(67 × 10·5 × 4)*
Main engines: 2 Skoda diesels; 3 000 hp; 2 shafts = 15 knots

The four of the modernised versions have a new foremast in the fore well-deck and a new, low superstructure before the bridge. Similar class operate as survey ships. Built at Gdansk, Poland between 1968-72.

SSV 512 *12/1980, MOD*

4 "MIRNY" CLASS

BAKAN (mod)
LOTSMAN (mod)
VAL (mod)
VERTIKAL

Displacement, tons: 537 standard; 847 full load
Dimensions, feet (metres): 208 × 31·2 × 13·8 *(63·4 × 9·5 × 4·2)*
Main engines: Diesel-electric; 4 diesels; 3 100 hp; 1 shaft = 18 knots
Range, miles: 18 700 at 11 knots
Complement: 31

Converted from whale-catchers in 1965. Three modified with extra accommodation on forward well-deck.

VAL *5/1980, MOD*

8 "MAYAK" CLASS

ANEROID
KHERSONES (mod)
KURS
KURSOGRAF (mod)
LADOGA
GS 239
GS 242 (mod)
GS 439 (ex-*Girorulevoy*) (mod)

Displacement, tons: 1 050 full load
Dimensions, feet (metres): 178 × 30·6 × 11·8 *(54·3 × 9·3 × 3·6)*
Main engine: 1 diesel; 1 shaft; 830 hp = 12 knots
Complement: 29

Built in the USSR from 1967. Advance on "Okean" class. Modified ships have additional accommodation on the well-deck. The port side of the superstructure is enclosed while the starboard is open.

GS 242 *7/1980, MOD*

1 "T 58" CLASS

GIDROLOG

Displacement, tons: 790 standard; 900 full load
Dimensions, feet (metres): 229·9 × 29·5 × 7·9 *(70·1 × 9 × 2·4)*
Guns: 4—57 mm (2 twin)
A/S weapons: 2—MBU 1800; 2 DCTs
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 17 knots
Complement: 82

An ex-minesweeper built about 1960. Operates in the Pacific.

15 "OKEAN" CLASS

ALIDADA
AMPERMETR
BAROGRAF
BAROMETR
DEFLEKTOR
EKHOLOT
GIDROFON
KRENOMETR
LINZA (mod)
LOTLIN
REDUKTOR (mod)
REPITER
TEODOLIT
TRAVERZ
ZOND (mod)

Displacement, tons: 720 full load
Dimensions, feet (metres): 167·3 × 28·9 × 12·1 *(51 × 8·8 × 3·7)*
Main engine: Diesel; 1 shaft; 540 hp = 11 knots
Range, miles: 7 500 at 10 knots
Complement: 32

Built in East Germany from 1959 to mid-1960s. Have the same variations in the superstructure with the port side closed in and the starboard side open as in the "Mayak" class, although there are many variations. Modified ships have additional accommodation on the well-deck.

ZOND *1975*

7 "LENTRA" CLASS

GS 34
GS 36
GS 41
GS 43
GS 46
GS 47
GS 55

Displacement, tons: 250 standard; 261 full load
Dimensions, feet (metres): 128·6 × 24·3 × 11·2 *(39·2 × 7·4 × 3·4)*
Main engine: 1 diesel; 400 hp = 11 knots
Range, miles: 6 900 at 9 knots

All built in USSR and East Germany 1957-63. Mainly employed in-area.

GS 43 *MOD*

2 "DNEPR" CLASS

IZMERITEL
PROTRAKTOR

Displacement, tons: 430 standard; 500 full load
Dimensions, feet (metres): 150 × 30 × 8 *(45·8 × 9·2 × 2·4)*
Main engines: 2 Burmeister and Wain diesels; 1 shaft; 1 250 shp = 11 knots
Complement: 70?

Ex-tuna-fishing ships built in Japan. Similar class name to depot ships.
Appearance differs from other AGIs in having the funnel widely separated from the bridge which is block-shaped with an inclined cat-walk up the side.

PROTRAKTOR *11/1977*

NAVAL RESEARCH SHIPS

Note: From time to time "Foxtrot" or "Zulu IV" class submarines are given names with astronomical associations (eg. *Lyra, Sirius, Mars*) and employed on oceanographic research usually in company with a naval research ship

"ZULU IV" Class *(Mars)* *1980*

6 "AKADEMIK KRYLOV" CLASS

ADMIRAL VLADIMIRSKY
AKADEMIK KRYLOV
IVAN KRUZENSHTERN
LEONID SOBOLEV
LEONID DEMIN
MIKHAIL KRUPSKY

Displacement, tons: 9 100
Dimensions, feet (metres): 469·1 × 60·7 × 20·3 *(143 × 18·5 × 6·2)*
Main engines: Diesels = 15 knots

Built in Stettin. Helicopter deck and hangar.

Radar: Two Don 2.

"AKADEMIK KRYLOV" Class

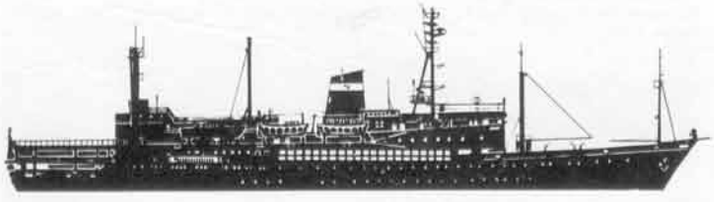
LEONID SOBOLEV *1/1980*

4 "ABKHASIYA" CLASS

ABKHASIYA **ADZHARIYA** **BASHKIRIYA** **MOLDAVIA**

Displacement, tons: 7 000 full load
Dimensions, feet (metres): 409·2 × 56 × 21·1 *(124·8 × 17·1 × 6·4)*
Aircraft: 1 helicopter
Main engines: 2 MAN diesels; 8 000 bhp = 18·2 knots
Range, miles: 20 000 at 15 knots
Endurance: 60 days

Built by Mathias Thesen Werft at Wismar. Fitted with helicopter platform and hangar aft. Completed: 1971, *Abkhasiya*, 1972, *Adzhariya*, 1973, other two. Some are hydromet reporting ships. Fitted with two bow thrusters.



"ABKHASIYA" Class

ABKHASIYA *3/1977*

3 "POLYUS" CLASS (KOVEL TYPE)

BAIKAL (mod) **BALKHASH** (mod) **POLYUS**

Displacement, tons: 6 900 standard
Measurement, tons: 3 897 gross; 1 195 net
Dimensions, feet (metres): 365·8 × 46·2 × 20·7 *(111·6 × 14·1 × 6·3)*
Main engines: Diesel-electric; 1 shaft; 4 000 bhp = 13·5 knots

These ships are a part of the "Andizhan" class of some 45 ships. They were converted whilst building by Schiffswerft Neptun of Rostock. *Polyus* in 1962 and the other two in 1964. Oceanographic research ships. First two ships have modified superstructure.

POLYUS *6/1978*

1 "MODIFIED DOBRYNYA NIKITICH" CLASS

VLADIMIR KAVRAYSKY

Displacement, tons: 2 000 standard; 2 675 full load
Dimensions, feet (metres): 223·1 × 59·1 × 19·7 *(68 × 18 × 6)*
Main engines: Diesel-electric; 3 shafts; 5 400 hp = 13·8 knots
Complement: 100

One of a numerous class of icebreakers built at Leningrad since the early 1960s—*V. Kavraysky* was built for polar research in 1970.

VLADIMIR KAVRAYSKY *5/1975, MOD*

8 "NIKOLAI ZUBOV" CLASS

ALEKSEI CHIRIKOV
ANDREI VILKITSKY
BORIS DAVYDOV
FADDEY BELLINGGAUSEN
FYODOR LITKE
NIKOLAI ZUBOV
SEMYON DEZHNEV
VASILI GOLOVNIN

Displacement, tons: 2 674 standard; 3 021 full load
Dimensions, feet (metres): 294·2 × 42·7 × 15 *(89·7 × 13 × 4·6)*
Main engines: 2 diesels; 5 280 shp; 2 shafts = 18 knots
Range, miles: 11 000 at 14 knots
Complement: 50

Oceanographic research ships built at Szczecin Shipyard, Poland in 1964. Also employed on navigational, sonar and radar trials. Have nine laboratories and small deck aft for hydromet-balloon work. Carry two to four survey launches.

"NIKOLAI ZUBOV" Class

BORIS DAVYDOV *5/1979, MOD*

1 "NEVELSKOY" CLASS

NEVELSKOY

Displacement, tons: 2 600
Dimensions, feet (metres): 272·3 × 49·2 × 11·5 *(83 × 15 × 3·5)*
Main engine: 1 diesel; 2 000 hp = 18 knots
Complement: 45

Was predecessor to "Zubov" class. Serves in the Pacific.

NEVELSKOY *1978, Michael D. J. Lennon*

9 "YUG" CLASS

GIDROLOG	**PLUTON**	**STRELETS**	**YUG**
PEGAS	**SENEZH**	**TAYGA**	**ZODIAC**
PERSEY			

Displacement, tons: 2 000 (estimated)
Dimensions, feet (metres): 268·9 × 39·4 × 13·1 *(82 × 12 × 4)*
Main engines: Diesels = 18 knots

Built at Gdansk 1978-79. *Gidrolog* based in Black Sea, *Senezh* in Northern Fleet, *Pegas* and *Tayga* in the Pacific and remainder are Baltic based.

STRELETS *12/1979, Selçuk Emre*

NAVAL SURVEY SHIPS

20 "MOMA" CLASS (+9 AGIs)

ALTAIR	**ARKTIKA**	**KOLGUYEV**	**OKEAN**
ANADIR	**ASKOLD**	**KRILON**	**RYBACHI** (mod)
ANDROMEDA	**BEREZAN**	**LIMAN**	**SEVER**
ANTARES	**CHELEKEN**	**MARS**	**TAYMYR**
ANTARKTYDA	**ELTON**	**MORSOVETS**	**ZAPOLARE**

Displacement, tons: 1 240 standard; 1 700 full load
Dimensions, feet (metres): 219·8 × 34·4 × 13·1 *(67 × 10·5 × 4)*
Main engines: 2 Skoda diesels; 3 000 shp; 2 shafts = 15 knots

Eight ships of this class were reported to have been built in Poland from 1967 to 1970 and the remainder since. Four laboratories. One survey launch and a 7 ton crane. *Rybachi* has no crane but has an additional deckhouse forward. Ships of this class serve in the Polish and Yugoslav navies.

Radar: Navigation: Two Don 2.
IFF: High Pole A.

"MOMA" Class

"MOMA" Class *1978*

17 "SAMARA" CLASS

AZIMUT	**KOLESNIKOV**	**TURA** (mod)
DEVIATOR	**KOMPAS**	**VAYGACH**
GIDROMETR	**PAMYAT MERKURYIA**	**VOSTOK**
GLUBOMER	**RUMB**	**YUG** (see note)
GORIZONT	**SOTNIKOV**	**ZENIT**
GRADUS	**TROPIK**	

Displacement, tons: 800 standard; 1 200 full load
Measurement, tons: 1 276 gross; 1 000 net
Dimensions, feet (metres): 190·2 × 34·4 × 12·5 *(58 × 10·5 × 3·8)*
Main engines: 2 Skoda diesels; 3 000 hp; 2 shafts = 15 knots
Range, miles: 6 200 at 11 knots
Complement: 45

Built at Gdansk, Poland 1962-64 for hydrographic surveying and research. Have laboratories and one survey launch and a 5 ton crane. *Tura* has additional accommodation forward having had her crane removed. *Yug* may have been renamed (?GS 275).

Radar: Don 2.

KOMPAS *5/1977, MOD*

12 "FINIK" CLASS

GS 44, 47, 270, 272, 278, 280, 388, 392, 397, 398, 401, 402

Displacement, tons: 850 full load
Dimensions, feet (metres): 196·8 × 31·2 × 11·5 *(60 × 9·5 × 3·5)*
Main engines: 2 diesels; 2 shafts = 16 knots

Improved "Biya" class. Built in Poland—continuing programme from 1978. Fitted with 5 ton crane.

GS 272 *6/1979, H. W. van Boeijen*

13 "BIYA" CLASS

GS 186, 193, 194, 198, 200, 202, 204, 206, 210, 214, 271, 273, 275

Displacement, tons: 750 full load
Dimensions, feet (metres): 180·4 × 30·2 × 8·5 *(55 × 9·2 × 2·6)*
Main engines: 2 diesels; 2 shafts (cp propellers); 1 200 shp = 13 knots
Range, miles: 4 700+ at 11 knots

With laboratory and one survey launch and a 5 ton crane. Built in Poland 1972-77.

Radar: Don 2.

Transfer: One to Guinea-Bissau in 1979.

"BIYA" Class *1976*

11 "KAMENKA" CLASS

GS 66, 74, 82, 107, 108 (ex-*Vernier*), **113** (ex-*Belbeck*), **118, 199, 203, 207, 211**

Displacement, tons: 700 full load
Dimensions, feet (metres): 180·5 × 31·2 × 8·5 *(55·1 × 9·5 × 2·6)*
Main engines: 2 diesels; 2 shafts (cp propellers); 1 800 hp = 14 knots

Built in Poland 1968-72. A 5 ton crane forward. They do not carry a survey launch but have facilities for handling and stowing buoys.

Transfer: One to Viet-Nam.

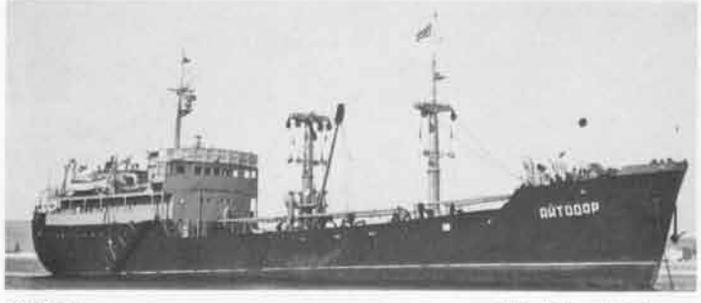
"KAMENKA" Class *1974, MOD*

5 "TELNOVSK" CLASS

AYTODOR SIRENA STVOR SVIYAGA ULYANA GROMOVA

Displacement, tons: 1 050 standard; 1 650 full load
Dimensions, feet (metres): 229·6 × 32·8 × 13·1 *(70 × 10 × 4)*
Main engines: 4 diesels; 1 600 shp = 10 knots
Complement: 50

Formerly coastal freighters. Built in Hungary in 1950s. Refitted and modernised for naval supply and surveying duties. *Stvor* and *Ulyana Gromova* have additional accommodation forward of the bridge and a gantry foremast. One survey launch.



AYTODOR *1974, Michael D. J. Lennon*

3 "MELITOPOL" CLASS

MAYAK NIVELIR PRIZMA

Displacement, tons: 1 200 full load
Dimensions, feet (metres): 189 × 29·5 × 14·1 *(57·6 × 9 × 4·3)*
Main engine: 1 diesel; 600 hp = 10 knots
Range, miles: 2 500 at 10 knots
Complement: 21

Built in the USSR 1952-55. Converted merchant ships carrying one survey launch.

13 "LENTRA" CLASS (+7 AGIs)

GIDROSAT, GROT, TAIFUN, GS 1, 2, 10, 11, 48, 50, 54, 59, 60, 68

Displacement, tons: 261 full load
Dimensions, feet (metres): 128·6 × 24·3 × 11·2 *(39·2 × 7·4 × 3·4)*
Main engine: 1 diesel; 400 hp = 11 knots

"LENTRA" Class *MOD*

7 "NYRYAT" CLASS

GB 480 + 7

Of 145 tons with a laboratory and two 1·5 ton derricks this class forms a numerous group of inshore survey craft.

CIVILIAN RESEARCH SHIPS

Note: There are some 100 ships ranging downwards from 3 200 tons engaged on fishery research world-wide. The larger ships are of the "Mayakovsky", "Tropik", "Atlantik", "Leskov" and "Luchegorsk" classes of 3 200-2 400 tons. Two of the "Mayakovsky" class carry submersibles.

1 "AMGUEMA" CLASS

MIKHAIL SOMOV

Displacement, tons: 15 100 full load
Dimensions, feet (metres): 436·4 × 62·3 × 28·2 *(133 × 19 × 8·6)*
Main engines: Diesel-electric; 7 200 bhp = 15 knots

Ice-strengthened.
Operates under Arctic and Antarctic Research Institute for research duties and Antarctic support. Sister ship *Yauza*, transport.

7 "AKADEMIK KURCHATOV" CLASS

AKADEMIK KOROLEV
AKADEMIK KURCHATOV
AKADEMIK SHIRSHOV
AKADEMIK VERNADSKY
DMITRI MENDELEYEV
PROFESSOR ZUBOV
PROFESSOR VIZE

Displacement, tons: 6 681 full load
Measurement, tons: 1 986 deadweight; 5 460 gross; 1 387 net
Dimensions, feet (metres): 400·3 to 406·8 × 56·1 × 15 *(122·1 to 124·1 × 17·1 × 4·6)*
Main engines: 2 Halberstadt 6-cyl diesels; 2 shafts; 8 000 bhp = 18 to 20 knots

All built by Mathias Thesen Werft at Wismar, East Germany between 1966 and 1968. All have a hull of the same design as the "Mikhail Kalinin" class of merchant vessels. There are variations in mast and aerial rig. *Professor Vize* is similar to *A. Shirshov* whilst *A. Kurchatov, A. Vernadsky* and *D. Mendeleyev* are the same. Two bow thrusters.

Duties: Hydromet (Vladivostock): *A. Korolev, A. Shirshov.*
Institute of Oceanology (Baltic): *A. Kurchatov.*
Institute of Oceanology (Vladivostock): *D. Mendeleyev.*
Ukraine Institute of Oceanology: *A. Vernadsky.*
Hydromet (Baltic): *P. Vize, P. Zubov.*

PROFESSOR ZUBOV *5/1979*

1 "KOLOMNA" CLASS

MIKHAIL LOMONOSOV

Displacement, tons: 5 960 normal
Measurement, tons: 3 897 gross; 1 195 net
Dimensions, feet (metres): 336 × 47·2 × 14 *(102·5 × 14·4 × 4·3)*
Main engine: 1—4-cyl Liebknecht triple-expansion; 2 450 ihp = 13 knots

Built by Neptun, Rostock, in 1957 from the hull of a freighter of the "Kolomna" class. Operated for the Academy of Sciences by Ukraine Institute of Oceanology, Black Sea. Equipped with 16 laboratories.

MIKHAIL LOMONOSOV *5/1979, L. and L. van Ginderen*

IZUMRUD

Measurement, tons: 3 862 gross, 465 net
Dimensions, feet (metres): 326 × 46 × 15·5 *(99·4 × 14 × 4·7)*
Main engines: Diesel-electric; 4 generators; 1 shaft = 13·8 knots

A research ship built in 1970 at Nikolayev. Used for structural and material tests. Owned by Ministry of Shipping. Operated by Naval Institute of Shipbuilding, Black Sea.

IZUMRUD *1976*

2 "LEBEDEV" CLASS

PYOTR LEBEDEV **SERGEI VAVILOV**

Measurement, tons: 3 642 gross; 1 164 net
Dimensions, feet (metres): 308·3 × 45·9 × 18·4 *(94 × 14 × 5·6)*
Main engine: 1—6-cyl Sulzer diesel; 2 400 hp = 14 knots

Research vessels with comprehensive equipment and accommodation.
Both built by Crichton-Vulcan, Finland in 1954.
Run by Hydroacoustic Institute, Baltic. Freighter conversions.

Radar: One Okean. One Don 2.

PYOTR LEBEDEV *1976*

OTTO SCHMIDT

Displacement, tons: 3 650
Main engines: Diesel-electric; 5 400 shp
Range, miles: 11 000

Built at Admiralty Yard, Leningrad. Icebreaker/polar research ship.
Launched 27 December 1978. Commissioned 17 July 1979.

9 "PASSAT" CLASS (B 88 TYPE)

ERNST KRENKEL (ex-*Vikhr*)
GEORGI USHAKOV (ex-*Schkval*)
MUSSON
OKEAN
PASSAT
PRIBOI
PRILIV
VIKTOR BUGAYEV (ex-*Poriv*)
VOLNA

Measurement, tons: 3 280 gross; 3 311 *(E. Krenkel, V. Bugaev)*
Dimensions, feet (metres): 318·5 × 45·6 × 15·4 *(97·1 × 13·9 × 4·7)*;
328 × 48·5 × 15·4 *(100 × 14·8 × 4·7) (E. Krenkel, V. Bugaev)*
Main engines: 2—8-cyl Sulzer Cegielski diesels; 2 shafts; 4 800 bhp = 16 knots

Hydromet ships built at Szczecin, Poland—1968. *Musson, Passat, Volna*; 1969. *Okean, Priboi*; 1970, *Priliv*; 1971, *G. Ushakov, E. Krenkel, V. Bugaev.*

Duties: Based at:
Vladivostock: *Okean, Priboi, Priliv, Volna, Passat.*
Black Sea: Remainder.

GEORGI USHAKOV *1975, Michael D. J. Lennon*

1 "MODIFIED MAYAKOVSKY" CLASS

A. I. VOYEYKOV

Displacement, tons: 3 000

Operated by Hydromet Service, Vladivostock.

"MODIFIED MAYAKOVSKY" Class *11/1979*

2 "TROPIK" CLASS

KALLISTO **PEGAS**

Measurement, tons: 1 200 deadweight; 2 345 gross; 1 100 net
Dimensions, feet (metres): 262 × 43 × 7 *(79·8 × 13·2 × ?)*
Main engines: 2—8-cyl Liebknecht diesels; 2 shafts; 1 660 bhp = 12·5 knots

Operated by Scientific Research Institute, Sakhalin. Modified for geological and biological research. Originally stern-trawler factory ships of the 70 strong class built by Volkswerft, Stralsund, East Germany between 1962 and 1966. Nine others converted for fishery research.

KALLISTO *1980, Michael D. J. Lennon*

11 "VALERIAN URYVAYEV" CLASS

DALNIE ZELENTSY, ISKATEL, ISSLEDOVATEL, MORSKOY GEOFTZIK, POISK, RUDOLF SAMOYLOVICH*, VALERIAN URYVAYEV*, VSEVOLOD BERYOZKIN*, VULKANOLOG, VYACHESLAV FROLOV*, YAKOV GAKKEL*

* Hydromet ships.

Measurement, tons: 350 deadweight; 697 gross; 85 net
Dimensions, feet (metres): 180·1 × 31·2 × 13·1 *(54·9 × 9·5 × 4)*
Main engine: 1 Deutz diesel; 850 bhp = 12 knots

Built at Khabarovsk between 1974 and 1979.

Bases: Murmansk: *V. Beryozkin, D. Zelentsy.* Baltic: *R. Samoylovich.* Black Sea: *Issledovatel, Y. Gakkel.* Pacific: Remainder

Tasks: *D. Zelentsy,* marine biology; *Issledovatel,* general oceanography; remainder, geology and geophysics.

YAKOV GAKKEL *9/1977, Giorgio Ghiglione*

19 "DMITRI OVSTYN" CLASS

DMITRI LAPTEV
DMITRI OVSTYN
DMITRI STERLEGOV
E. TOLL
FYODOR MATISEN
G. MAKSIMOV
IVAN KIREYEV
N. KOLOMEYTSEV
N. YEVGENOV
PAVEL BASHMAKOV
PROFESSOR BOGOROV
PROFESSOR KURENTSOV
PROFESSOR SHTOKMAN
PROFESSOR VODNANITSKY
S. KRAKOV
STEFAN MALYGIN
VALERIAN ALBANOV
V. SUKHOTSKY
YAKOV SMIRNITSKY

Displacement, tons: 1 800 full load
Dimensions, feet (metres): 220 × 39 × 15 *(67·1 × 11·9 × 4·6)*
Main engine: 1—6-cyl Deutz diesel; 2 200 bhp = 16 knots
Complement: 52 (including 20 scientists)

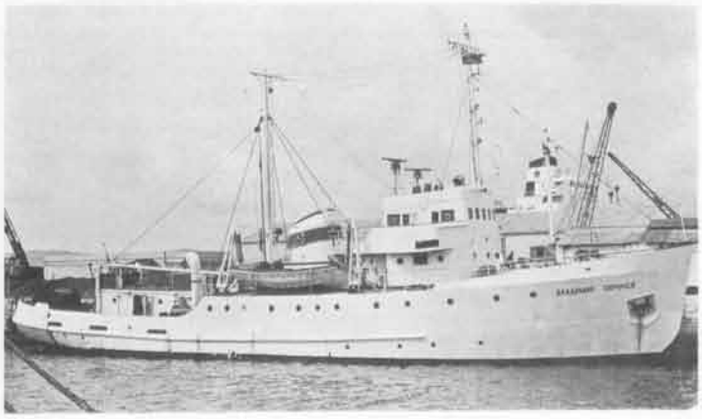
Built by Abo at Laivateollisuus, Finland except *P. Bogorov* at Turku, Finland. Fitted with bow thruster and eight laboratories. Employed largely on geological research oceanographic work and survey in the Arctic. Completed between 1974 and 1978. Average time from launch to completion, seven months.
Owned by Ministry of Merchant Marine except for the four Professors who are subordinated to the Academy of Sciences.

PROFESSOR SHTOKMAN *10/1980, L. and L. van Ginderen*

VLADIMIR OBRUCHEV

Measurement, tons: 534 gross
Dimensions, feet (metres): 156·5 × 32·2 × 16·4 *(47·7 × 9·8 × 5)*
Main engines: 2 diesels; = 11 knots

One of the "Gromovoy" class tugs built in Romania in 1959 and subsequently converted for seismic research duties.



VLADIMIR OBRUCHEV *1975*

NEREY **NOVATOR**

Measurement, tons: 369 gross
Dimensions, feet (metres): 118·1 × 24·7 × 11·5 *(36 × 7·5 × 3·5)*
Main engines: 2 diesels = 11 knots

Built in the USSR in 1956 and 1955. Originally fleet tugs. *Novator* converted for seismic research and run by the Ministry of Geology. *Nerey* is a hydromet ship.

NEREY *9/1978, Reinhard Nerlich*

AKADEMIK ARKHANGELSKY **YURY GODIN**

Measurement, tons: 416 tons gross
Dimensions, feet (metres): 132·9 × 24·9 × 13·1 *(40·5 × 7·6 × 4)*
Main engine: 1 diesel = 10 knots

Built in the USSR in 1963.

AKADEMIK ARKHANGELSKY *1974, Michael D. J. Lennon*

3 "AKADEMIK L. ORBELI" CLASS

AKADEMIK KOVALEVSKY **AKADEMIK L. ORBELI** +1

Measurement, tons: 284 gross
Dimensions, feet (metres): 126·8 × 23·7 × 11·5 *(38·1 × 7·2 × 3·5)*;
Main engine: 1 diesel = 10 knots

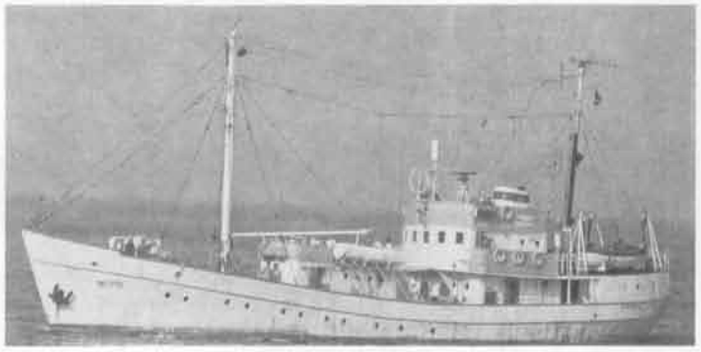
Built in East Germany in 1949. Oceanographic ships run by Academy of Sciences.

AKADEMIK KOVALEVSKY *9/1979*

MGLA

Measurement, tons: 299 gross
Dimensions, feet (metres): 129·5 × 24·3 × 11·8 *(39·5 × 7·4 × 3·6)*
Main engine: 1 diesel = 8·5 knots

Hydromet research ship.

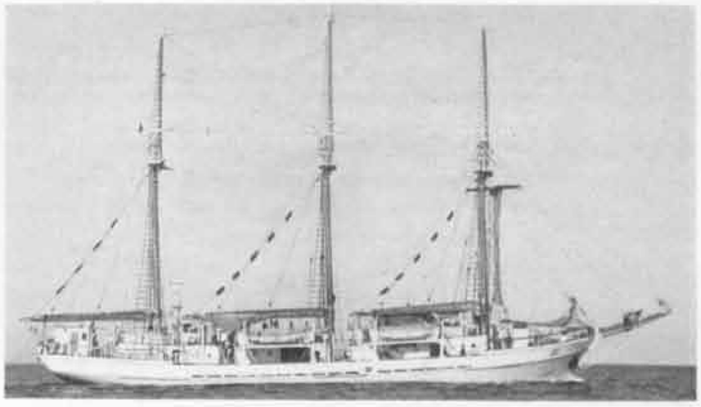


MGLA *1974, Michael D. J. Lennon*

ZARYA

Measurement, tons: 333 gross; 71 net

Built in 1952 for geomagnetic survey work. Run by Academy of Sciences.



ZARYA *1972, Michael D. J. Lennon*

NAVAL MISSILE RANGE SHIPS

2 "DESNA" CLASS

CHAZHMA (ex-*Dangara*) **CHUMIKAN** (ex-*Dolgeschtschelje*)

Displacement, tons: 5 300 light; 14 065 full load
Dimensions, feet (metres): 457·7 × 59 × 25·9 *(139·6 × 18 × 7·9)*
Aircraft: 1 helicopter
Main engines: 2—7-cyl diesels; 5 200 hp = 16 knots

Formerly bulk ore-carriers of the "Dshankoy" class (7 265 tons gross).
Soviet Range Instrumentation Ships (SRIS). Active since 1963. Based in the Pacific.

Communications: Two Vee Cone.

Radar: Search: Head Net B; Ship Globe.
Navigation: Don 2.

"DESNA" Class

4 "SIBIR" CLASS

CHUKOTKA **SAKHALIN** **SIBIR** **SPASSK** (ex-*Suchan*)

Displacement, tons: 3 820 standard; 4 800 full load
Dimensions, feet (metres): 354 × 49·2 × 20 *(108 × 15 × 6·1)*
Main engines: Compound 4-cyl with LP turbine; 2 500 hp = 12 knots
Range, miles: 3 300 at 12 knots

Converted bulk ore carriers employed as Missile Range Ships in the Pacific. *Sakhalin* and *Sibir* have three radomes forward and aft, and carry helicopters. *Spassk* is also equipped with a helicopter flight deck. Launched in 1957-59. Formerly freighters of the Polish B 31 type ("Donbass" class). Rebuilt in 1958-59 as missile range ships in Leningrad. Based in Pacific.

Refit: One ship refitted and now has new funnel, mast and electronics.

"SIBIR" Class

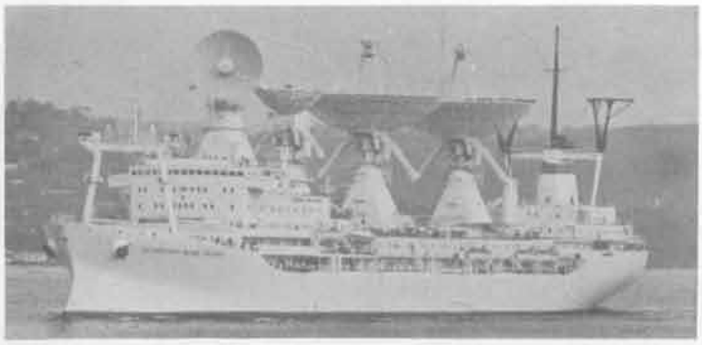
CIVILIAN SPACE ASSOCIATED SHIPS

1 "GAGARIN" CLASS

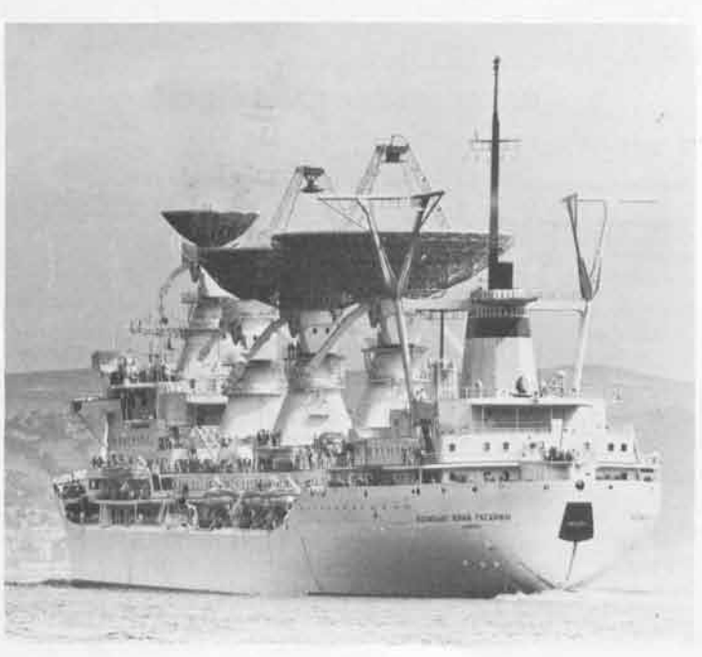
KOSMONAUT YURI GAGARIN

Displacement, tons: 45 000
Measurement, tons: 32 291 gross; 5 247 net
Dimensions, feet (metres): 773·3 × 101·7 × 30·2 *(235·9 × 31 × 9·2)*
Main engines: 2 geared steam turbines; 1 shaft; 19 000 shp = 17 knots

Design based on the "Sofia" or "Akhtuba" (ex-"Hanoi") class steam tanker. Built at Leningrad by Baltic S.B. & Eng Works in 1970, completed in 1971. Used for investigation into conditions in the upper atmosphere, and the control of space vehicles. She is the largest Soviet research vessel. Has bow and stern thrust units for ease of berthing. With all four aerials vertical and facing forward she experiences a loss in speed of 2 knots. Based in Black Sea.



KOSMONAUT YURI GAGARIN *5/1978, S. C. Vessey*



KOSMONAUT YURI GAGARIN *1979, Selçuk Emre*

1 "KOMAROV" CLASS

KOSMONAUT VLADIMIR KOMAROV (ex-*Genichesk*)

Displacement, tons: 17 500 full load
Measurement, tons: 6 650 deadweight; 13 935 gross; 5 304 net
Dimensions, feet (metres): 510·8 × 75·5 × 29·5 *(155·8 × 23 × 9)*
Main engine: 1—6-cyl Bryansk diesel; 9 000 bhp
Speed, knots: 17·5

She was launched in 1966 at Kherson as *Genichesk* and operated as a "Poltava" class dry cargo ship in the Black Sea for about six months. Converted to her present role at Leningrad in 1967. The ship is named in honour of the Soviet astronaut who died when his space craft crashed in 1967. Based in Black Sea.

KOSMONAUT VLADIMIR KOMAROV *2/1977*

KOSMONAUT VLADIMIR KOMAROV *1977, Selçuk Emre*

1 "KOROLEV" CLASS

AKADEMIK SERGEI KOROLEV

Displacement, tons: 21 250
Measurement, tons: 17 114 gross; 2 158 net
Dimensions, feet (metres): 597·1 × 82 × 30·2 *(182·1 × 25 × 9·2)*
Main engine: 1—8-cyl Bryansk diesel; 12 000 shp
Speed, knots: 17

Built at Chernomorsky Shipyard, Nikolayev in 1970, completing in 1971. Equipped with the smaller type radome and two "saucers". Based in Black Sea.

AKADEMIK SERGEI KOROLEV *1972, Michael D. J. Lennon*

AKADEMIK SERGEI KOROLEV *1977, MOD*

4 "KOSMONAUT PAVEL BELYAYEV" CLASS

KOSMONAUT VLADKLAV VOLKOV **KOSMONAUT PAVEL BELYAYEV**
KOSMONAUT GEORGI DOBROVOLSKY **KOSMONAUT VIKTOR PATSAYEV**

Displacement, tons: 4 900 standard; 5 970 full load
Dimensions, feet (metres): 400·3 × 55·1 × 22·3 *(122·1 × 16·8 × 6·8)*
Main engine: 1 Burmeister and Wain diesel; 5 200 hp; 1 shaft = 16 knots

Former freighters of "Vytegrales" class rebuilt as space associated research ships at Leningrad 1977-78.

KOSMONAUT VIKTOR PATSAYEV *1/1981, L. and L. van Ginderen*

4 "VYTEGRALES" CLASS

BOROVICHI (ex-*Svirles*) **KEGOSTROV** (ex-*Taimyr*) **MORZHOVETS** **NEVEL**

Former timber carriers built at Zhdanov Yard, Leningrad in 1965-66 and completely modified with a comprehensive array of tracking, direction finding and directional aerials in 1967. Additional laboratories built above the forward holds. Sister ships to the naval-manned "Vytegrales" class. Based in the Baltic.

KEGOSTROV *1980, Michael D. J. Lennon*

TRAINING SHIPS

Notes: (a) Other training ships include a number of "Mayak" class.
(b) In addition to the naval training ships listed here a considerable fleet of other training ships, mainly mercantile marine, may be encountered. These are mainly in the 300-400 ft bracket. Names: *Equator, Gorizont, Meridian, Professor Anichkov, P. Khlyustin, P. Kudrevich, P. Minyayev, P. Pavlenko, P. Rybaltovsky, P. Shchyogolev, P. Ukhov, P. Yushenko, Zenit.*
(c) For details of two "Ugra" class see *Support and Depot Ships* section.

3 "SMOLNY" CLASS

KHASAN **PEREKOP** **SMOLNY**

Displacement, tons: 6 500 full load
Dimensions, feet (metres): 452·6 × 59 × 20·3 *(138 × 18 × 6·2)*
Guns: 4—76 mm (twins); 4—30 mm (twins)
A/S weapons: 2—MBU 2500
Main engines: 4 diesels; 2 shafts; 16 000 shp = 20 knots
Range, miles: 20 000 at 15 knots
Complement: 150

Built at Szczecin, Poland. *Smolny* completed in 1976, *Perekop* in 1977 and *Khasan* in 1978. Can carry 300 cadets.

Electronics: ECM: two Watch Dog.

Radar: Search: One Head Net C.
Fire control: One Owl Screech; one Drum Tilt.
Navigation/Training: Four Don 2; (one Don Kay, three Don 2 in *Perekop*).

Sonar: One hull-mounted.

KHASAN *5/1978, Selçuk Emre*

2 "WODNIK" CLASS

LUGA **OKA**

Displacement, tons: 1 800
Dimensions, feet (metres): 239·4 × 39·4 × 16·4 *(73 × 12 × 5)*
Guns: 4—30 mm (twin); 2—25 mm (twin)
Main engines: 2 diesels; 2 shafts (cp propellers); 3 600 hp = 15 knots
Range, miles: 8 000 at 11 knots
Complement: 58 plus 90 cadets

Built at Gdynia, Poland. Of same general design as Polish and East German ships with an extra deck in the bridge and a larger superstructure.

"WODNIK" Class

COMMUNICATIONS RELAY SHIPS

10 "LIBAU" CLASS

Displacement, tons: 310 standard; 380 full load
Dimensions, feet (metres): 170·6 × 21·5 × 9 *(52 × 6·6 × 2·7)*
Main engines: 3 diesels; 3 shafts; 3 300 bhp = 24 knots
Range, miles: 1 500 at 12 knots

Converted "Kronshtadt" class. Now obsolete and being deleted.

CABLE SHIPS

8 "KLASMA" CLASS

DONETZ **INGUL*** **INGURI** **KATUN** **TAVDA** **TSNA** **YANA*** **ZEYA**
*Type I

Displacement, tons: 6 000 standard; 6 900 full load
Measurement, tons: 3 400 deadweight; 5 786 gross
Dimensions, feet (metres): 427·8 × 52·5 × 19 *(130·5 × 16 × 5·8)*
Main engines: Diesel-electric; 5 Wärtsilä Sulzer diesels (only 4 in *Ingul* and *Yana*); 5 000 shp; 2 electric motors; 2 150 shp = 14 knots
Range, miles: 12 000 at 14 knots
Complement: 110

Ingul and *Yana* were built by Wärtsilä, Helsingforsvarvet, Finland, laid down on 10 October 1961 and 4 May 1962 and launched on 14 April 1962 and 1 November 1962 respectively. *Donetz* and *Tsna* were built at the Wärtsilä, Abovarvet. *Donetz* was launched on 17 December 1968 and completed 3 July 1969. *Tsna* was completed in summer 1968. *Zeya* was delivered on 20 November 1970. *Donetz, Tsna* and *Zeya* are of slightly modified design.
Tavda laid down 14 April 1976, launched 21 October 1976 and completed 6 October 1977. *Inguri* laid down 21 October 1976 and launched 7 October 1977.
All are ice strengthened and can carry 1 650 miles of cable.

"KLASMA" Class

YANA (Type I—no gantry aft) *3/1976, MOD*

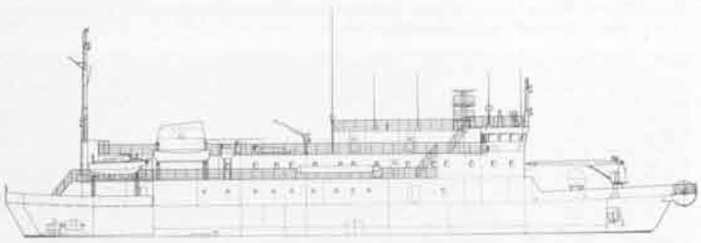
KATUN (Type II—with gantry aft) *7/1974*

1 + 2 NEW CONSTRUCTION

Measurement, tons: 600 deadweight
Dimensions, feet (metres): 249 × 41·3 × 9·8 *(75·9 × 12·6 × 3)*
Main engines: Diesel electric; 2 Wärtsilä Vasa 6R 22 diesels; 1 360 hp = 11 knots (see note)

First ordered on 3 March 1978, completed 1980—second pair ordered 9 March 1980 from Wärtsilä.
Designed for shallow water cable-laying. Carry 300 tons of cable.

Engineering: The two electric motors drive propellers which can be inclined to the ship's path giving, with a bow thruster, improved turning moment.



WÄRTSILÄ NEW CONSTRUCTION *1980*

5 "KALAR" CLASS

KALAR **KURGAN** **UMBA** **KS 3** **+1**

"Soldek" class merchant ships converted for cable-laying in late 1950s.

"KALAR" Class

SERVICE FORCES

Note: With the Soviet merchant fleet under State control any ships of the merchant service, including tankers, may be diverted to a fleet support role at any time. Over half the Soviet navy's support out-of-area is from merchant tankers.

1 "BEREZINA " CLASS (REPLENISHMENT SHIP)

BEREZINA

Displacement, tons: 40 000 full load approx
Dimensions, feet (metres): 689 × 85·3 × 32·8 *(210 ×26 × 10)*
Aircraft: 2 Hormone A helicopters
Missiles: SAM; Two SA-N-4 (twin launcher abaft funnel)
Guns: 4—57 mm (twins); 4—30 mm Gatlings
A/S weapons: 2—MBU 4500A (6-barrelled)
Main engines: 2 diesels; 54 000 shp; 2 shafts
Speed, knots: 22
Range, miles: 15 000 at 16 knots
Complement: 500

Built at Nikolayev (61 Kommuna) and completed in 1977 this very impressive ship is probably the first of a group designed to support the "Kiev" class aircraft carriers. At present no further ship has been built and this may be a prototype preceding the remainder for trials and evaluation. The weight of her armament is notable in comparison with Western practice. This is the first Soviet replenishment ship to be fitted with SAM missiles and Gatling guns as well as carrying helicopters and mounting MBUs. This total gives her a considerable AA capability and, if the helicopters have an A/S as well as VERTREP role, a certain self-sufficiency in anti-submarine operations. The siting of the MBU 4500A forward of the bridge is unique in this navy. Laid down 1973, launched 1975.

Cargo: Approx 16 000 tons fuel; 3 000 tons provisions; 500 tons fresh water.

Radar: Search: Strut Curve.
Fire control: Pop Group (SA-N-4); Muff Cob (57 mm); two Bass Tilt (Gatlings).
IFF: High Pole.

Replenishment gear: Two storing gantries (apparently with moving high-points); four 10 ton cranes and one other; liquid fuelling gantry (amidships); stern refuelling.

Sonar: One hull-mounted.

BEREZINA *1/1979, MOD*

BEREZINA *2/1979, Ulrich Schulz-Torge*

6 "BORIS CHILIKIN" CLASS (REPLENISHMENT SHIPS)

BORIS BUTOMA **GENRIK GASANOV**
BORIS CHILIKIN **IVAN BUBNOV**
DNESTR **VLADIMIR KOLECHITSKY**

Displacement, tons: 23 400 full load
Dimensions, feet (metres): 531·5 × 70·2 × 28·1 *(162·1 × 21·4 × 8·6)*
Guns: 4—57 mm (2 twins) (guns removed in all ships)
Main engines: 4 diesels; 9 600 hp; 1 shaft = 19 knots
Range, miles: 10 000 at 16 knots

Based on the "Veliky Oktyabr" merchant ship tanker design *Boris Chilikin* was built at the Baltic Yard, Leningrad completing in 1971. This is the first Soviet Navy class of purpose built underway fleet replenishment ships for the supply of both liquids and solids, indicating a growing awareness of the need for afloat support for a widely dispersed fleet. Earlier ships can supply solids on both sides forward. Later ships supply solids to starboard, liquids to port forward. All can supply liquids either side aft and astern. A continuing programme at the same yard.
The removal of both fire control radar and armament is in contrast to the considerable weight of such items carried in *Berezina*.

Cargo: 13 000 tons fuel oil and dieso; 400 tons ammunition; 400 tons spares; 400 tons victualling stores and 500 tons fresh water.

Radar: Search and fire control: Fitted for but not with Strut Curve and Muff Cob.
Navigation: Two Don Kay.

"BORIS CHILIKIN" Class

DNESTR *1/1980, MOD*

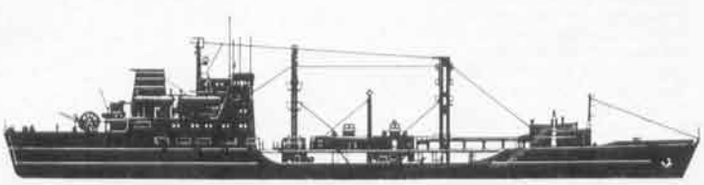
4 "DUBNA" CLASS (REPLENISHMENT TANKERS)

DUBNA **IRKUT** **PECHENGA** **SVENTA**

Displacement, tons: 12 000
Measurement, tons: 6 800 deadweight; 6 022 gross; 2 990 net
Dimensions, feet (metres): 393·6 × 65·6 × 23·6 *(120 × 20 × 7·2)*
Main engines: 2 diesels; 6 000 hp = 16 knots
Complement: 80

Dubna completed 1974, *Irkut* launched January 1975, completed December 1975 both at Rauma-Repola, Finland. Two more ordered April 1977, *Pechenga* commissioned end 1978. Normally painted in merchant navy colours.

Replenishment: Carry 2 100 tons FFO, 2 100 tons dieso, 120 tons lub-oil, 300 tons fresh water, 50 tons spares and 50 tons victualling stores. Can refuel on either beam and astern. Have one-ton replenishment stations forward.



"DUBNA" Class

IRKUT *2/1980, US Navy*

3 "KAZBEK" CLASS (REPLENISHMENT TANKERS)

ALATYR **DESNA** **VOLKHOV**

Displacement, tons: 16 250 full load
Measurement, tons: 12 000 deadweight; 8 230 gross; 3 942 net
Dimensions, feet (metres): 477·2 × 62·9 × 26·9 *(145·5 × 19·2 × 8·2)*
Main engines: 2 diesels; 2 shafts; 4 000 hp = 14 knots
Range, miles: 18 000 at 14 knots
Complement: 46

Former "Leningrad" class merchant fleet tankers taken over by the Navy. Built at Leningrad and Nikolaev from 1951 to 1961. Eight others—*Karl Marx, Kazbek, Dzerzhinsk, Grodno, Cheboksary, Liepaya, Zhitomir* and *Buguzuslan*—have acted in support of naval operations. The original class numbered 64. All three now modified for alongside replenishment.

Appearance: The naval ships of this class can be distinguished by the A-frame before the bridge, the two forward kingposts and the cat-walks.

Radar: Two Don 2.
IFF: High Pole A.

Replenishment: 11 600 tons fuel oil.

DESNA *1976, MOD*

1 REPLENISHMENT TANKER

POLYARNIK (ex-*Karnten*, ex-Netherlands)

Displacement, tons: 12 500
Dimensions, feet (metres): 433·4 × 53·1 × 24·9 *(132·1 × 16·2 × 7·6)*
Main engines: 2 Werkspoor diesels; 7 000 shp; 2 shafts = 15 knots
Complement: 57

The most senior naval tanker serving. Sighted in 1979 in Pacific. In 1940 this ship was under construction for the Royal Netherlands Navy, was taken by the Germans and, in 1945 seized by the USSR in Northern Norway. All efforts by the legal owners to re-possess their property were unavailing.

Radar: Don 2.

Replenishment: 5 600 tons of fuel oil, water and solids. Two beam and one stern positions.

POLYARNIK *12/1979, USN*

6 "UDA" CLASS (REPLENISHMENT TANKERS)

DUNAY (mod) **KOIDA** **LENA** **SHEKSNA** **TEREK** (mod) **VISHERA**

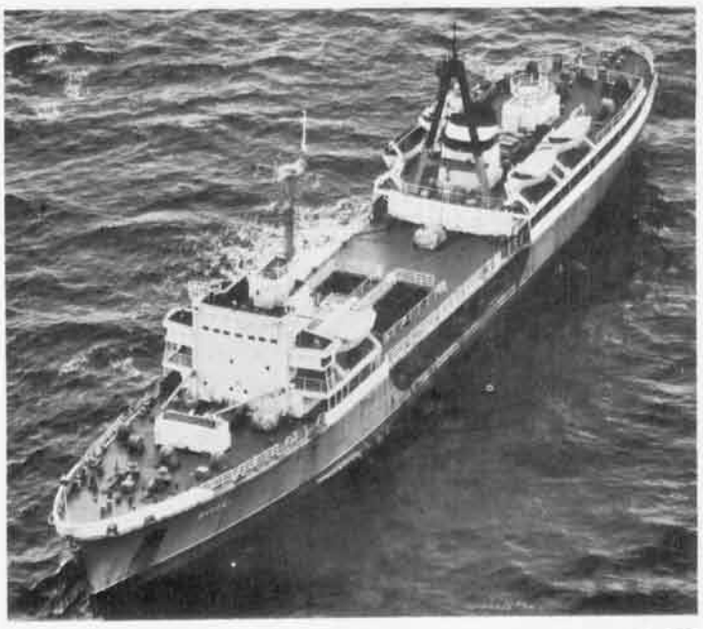
Displacement, tons: 5 500 standard; 7 200 full load
Dimensions, feet (metres): 400·3 × 51·8 × 20·3 *(122·1 × 15·8 × 6·2)*
Main engines: Diesels; 2 shafts; 8 000 bhp = 17 knots
Complement: 85

All have a beam replenishment capability—two have been modified with additional gantry amidships. Fitted for two quadruple 57 mm guns. Built since 1961. *Koida* was first Soviet ship refitted in Greek Orion shipyard.

Radar: Two Don 2.

Transfers: Three to Indonesia in 1960s.

"UDA" Class



SHEKSNA *11/1979, MOD*

6 "ALTAY" (IMPROVED "OLEKMA") CLASS (REPLENISHMENT TANKERS)

ELNYA **ILIM** **IZHORA** **KOLA** **PRUT** **YEGORLIK**

Displacement, tons: 5 500 standard
Dimensions, feet (metres): 348 × 51 × 19·7 *(106·2 × 15·5 × 6)*
Main engine: 1 Burmeister and Wain diesel; 2 900 hp; 1 shaft = 14 knots
Range, miles: 8 600 at 12 knots
Complement: 44

Building from 1967 onwards. All now modified for alongside replenishment. This class is part of 38 ships, being the third group of Rouma types built in Finland in 1967. Of similar hull to "Olekma" class (following) though with bridge aft.

PRUT *4/1977, MOD*

3 "OLEKMA/PEVEK" CLASSES (REPLENISHMENT/SUPPORT TANKERS)

IMAN **OLEKMA** (mod) **ZOLOTOY ROG** ("Pevek" class)

Displacement, tons: 4 000 standard; 6 700 full load
Dimensions, feet (metres): 344·5 × 47·9 × 20·0 *(105·1 × 14·6 × 6·1)*
Main engine: 1 diesel; 2 900 bhp = 14 knots
Range, miles: 8 000 at 13 knots
Complement: 40

Part of the second group of 34 tankers built by Rauma-Repola, Finland between 1960 and 1966. Similar hull to "Altay" class (preceding) though with bridge amidships. *Olekma* modified for replenishment.

OLEKMA *1978*

1 "SOFIA" CLASS (SUPPORT TANKER)

AKHTUBA (ex-*Hanoi*)

Displacement, tons: 62 000 full load
Dimensions, feet (metres): 757·9 × 101·7 × 38 *(231·2 × 31 × 11·6)*
Main engine: Steam turbine; 19 000 hp = 17 knots
Range, miles: 21 000 at 17 knots
Complement: 65

Built as the merchant tanker *Hanoi* in 1963 at Leningrad, she was taken over by the Navy in 1969 and renamed *Akhtuba*. The hull type was used in the construction of the space associated ship *Kosmonaut Yuri Gagarin*.

AKHTUBA *1978*

1 "FEOLENT" CLASS (SUPPORT TANKER)

FEOLENT (ex-*Jeverland*, ex-UK)

Displacement, tons: 5 250
Dimensions, feet (metres): 297·8 × 45·2 × 18·3 *(90·8 × 13·8 × 5·6)*
Main engines: 2 Schichau diesels; 2 shafts; 3 500 shp = 15 knots
Cargo, tons: 2 600
Complement: 65

Begun by Howaldtswerke, Hamburg in 1938; completed by Burmeister and Wain, Denmark in May 1942. Transferred to UK May 1945 and subsequently passed to USSR. Similar to East German "Usedom" class. Serves in Black Sea.

Capacity: 2 600 tons fuel oil.

2 "DORA" CLASS (SUPPORT TANKERS)

IZHMA +1

Displacement, tons: 973 full load
Dimensions, feet (metres): 200·1 × 29·5 × 9·2 *(61 × 9 × 2·8)*
Main engines: 2 diesels; 2 shafts; 900 hp = 12 knots
Range, miles: 1 200 at 12 knots
Complement: 26

Built 1941-43 as German aviation fuel tankers. Taken over by UK in May 1945 and passed to USSR in 1946.

4 "KONDA" CLASS (SUPPORT TANKERS)

KONDA **ROSSOSH** **SOYANA** **YAKHROMA**

Displacement, tons: 1 178 standard; 1 300 full load
Dimensions, feet (metres): 226·3 × 33 × 14·1 *(69 × 10 × 4·3)*
Main engine: 1 diesel; 1 600 bhp = 13 knots
Complement: 26

Originally of the "Iskra" class of merchant tankers built in 1955.
Have a stern refuelling capability.

Radar: One Don 2 or Neptun.

YAKHROMA *8/1977, MOD*

3 "NERCHA" CLASS (SUPPORT TANKERS)

KLYASMA **NARA** **NERCHA**

Displacement, tons: 1 080 standard; 1 250 full load
Dimensions, feet (metres): 226·3 × 33 × 14·1 *(69 × 10 × 4·3)*
Main engine: One 6-cyl diesel; 1 000 hp = 11 knots
Complement: 25

Built in Finland 1952-55 as part of class of 12. Renamed in naval service. Have a stern refuelling capability.

12 "KHOBI" CLASS (SUPPORT TANKERS)

CHEREMSHAN	**METAN**	**SHELON**	**TARTU**
KHOBI	**SEIMA**	**SOSVA**	**TITAN**
LOVAT	**SHACHA**	**SYSOLA**	**TUNGUSKA**

Displacement, tons: 800 light; 1 525 full load
Dimensions, feet (metres): 207 × 32·8 × 12·5 *(63·1 × 10 × 3·8)*
Main engines: 2 diesels; 2 shafts; 1 600 shp = 12 knots
Complement: 29

Built from 1957 to 1959. Part of a class of 25. Can refuel while being towed. Now being deleted.

Radar: One Don 2; one Spin Trough.

Transfers: Two to Albania; three to Indonesia.

LOVAT *1977*

1 "IRTISH" CLASS (SUPPORT TANKER)

NARVA

Measurement, tons: 1 124 deadweight
Dimensions, feet (metres): 224·7 × 34·1 × 14·1 *(68·5 × 10·4 × 4·3)*
Main engine: Diesel; 1 shaft; 930 hp = 10 knots

1 "BASKUNCHAK" CLASS (SUPPORT TANKER)

IVAN GOLUBETS

Displacement, tons: 2 920 full load
Dimensions, feet (metres): 227 × 29 × 12·3 *(70 × 8·9 × 3·8)*
Speed, knots: 13

Last of a large class. One transferred to East Germany.

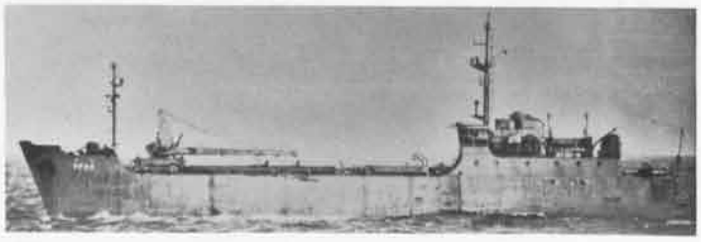
1 "URAL" CLASS (SPECIAL TANKER)

URAL

Displacement, tons: 2 000 (approx)
Dimensions, feet (metres): 262·4 × 39·4 × 14·8 *(80 × 12 × 4·5)*
Main engine: Diesel = 12 knots

Used for transporting radiological liquids.

Radar: Don.



URAL *7/1973*

6 "LUZA" CLASS (SPECIAL TANKERS)

ALAMBAI **BARGUZIN** **KAMA**
ARAGVI **DON** **SELENGA**

Displacement, tons: 3 000 full load
Dimensions, feet (metres): 267·3 × 37·7 × 14·1 *(81·5 × 11·5 × 4·3)*
Main engine: 1 diesel; 2 200 = 12 knots

Used for transporting radiological liquids.

DON *2/1972*

6 "VALA" CLASS (SPECIAL TANKERS)

VALA +5

Displacement, tons: 3 000
Dimensions, feet (metres): 250 × 40·8 × 16·4 *(76·2 × 12·5 × 5)*
Main engine: 1 diesel = 14 knots

Used for transporting special liquids.

HOSPITAL SHIPS

2 "OB" CLASS

OB **YENISEI**

Displacement, tons: 11 000 full load
Dimensions, feet (metres): 492·1 × 60·2 × 18·1 *(150 × 18·5 × 5·7)*
Aircraft: 1 helicopter with hangar
Main engines: 2 diesels; 2 shafts
Complement: 80 + 200 medical staff

Built at Szczecin, Poland. *Ob* completed in 1980 and transferred to the Pacific in September 1980. *Yenisei* completed 1981. Have up to 500 beds. The first purpose-built hospital ships in the Soviet navy, a programme which may have been prompted by the use of several merchant ships off Angola for Cuban casualties in the "war of liberation."

OB *1980, USN*

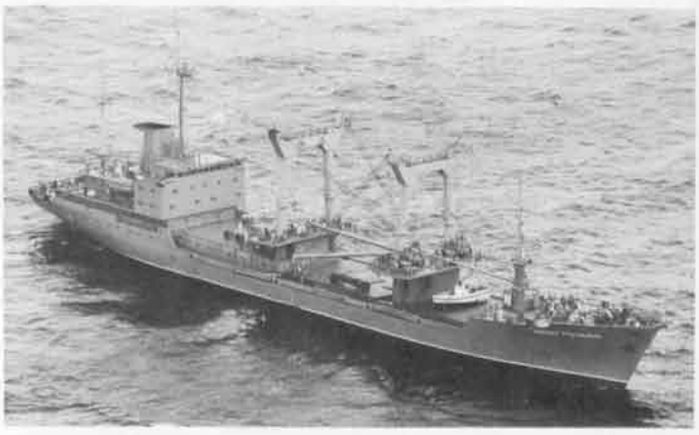
SALVAGE, RESCUE and MOORING VESSELS

2 "RUDNITSKY" CLASS

MIKHAIL RUDNITSKY **GEORGY KOZMAN**

Displacement, tons: 12 000
Dimensions, feet (metres): 449·4 × 59 × 24·6 *(137 × 18 × 7·5)*
Main engines: 2 diesels; 6 700 shp = 16 knots

Built at Vyborg, based on "Moskva Pionier" class merchant ship hull. First completed 1979, second in 1980. Fly flag of Salvage and Rescue Service. Have two 40 ton and two 20 ton lifts with cable fairleads forward and aft.



MIKHAIL RUDNITSKY *1980, MOD*

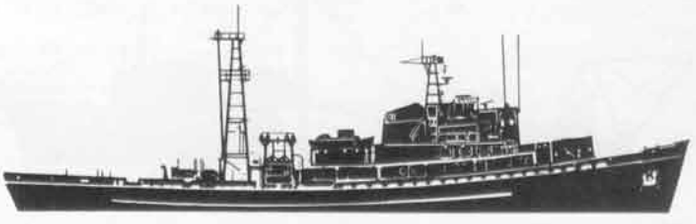
8 "PRUT" CLASS

ALTAY **BESHTAU** **VLADIMIR TREFOLEV** **ZHIGUILI**
SS 21 **SS 23** **SS 26** **SS 83**

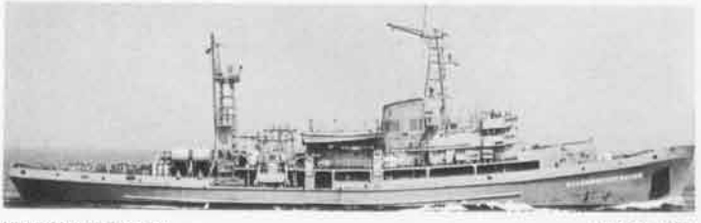
Displacement, tons: 2 120 standard; 2 640 full load
Dimensions, feet (metres): 285 × 43·9 × 14·1 *(86·9 × 13·4 × 4·3)*
Guns: 4—57 mm (quad) (some)
Main engines: 2 diesels; 4 200 bhp = 18 knots
Complement: 42

Large rescue vessels. Built 1960-66. Carry heavy duty derrick, submersible recompression chambers, rescue chambers and bells. Four marker buoys stowed abaft mainmast.

Radar: Search: Strut Curve.
Fire control: Muff Cob (some).
Navigation: Don.



"PRUT" Class



VLADIMIR TREFOLEV *12/1979, MOD*

2 "PAMIR" CLASS

AGATAN **ALDAN**

Displacement, tons: 2 240
Dimensions, feet (metres): 256 × 42 × 13·5 *(78 × 12·8 × 4·1)*
Main engines: 2—10-cyl 4 stroke diesels; 2 shafts; 4 200 bhp = 17 knots
Range, miles: 15 000 at 17 knots

Salvage tugs built at AB Gavle Varv, Sweden, in 1959-60. Equipped with one 10 ton and two 1·5 ton derricks, powerful pumps, air compressors, diving gear, recompression chambers, fire-fighting apparatus and electric generators.

ALDAN *4/1975, MOD(N)*

2 "INGUL" CLASS

PAMIR **MASHUK**

Displacement, tons: 4 050
Dimensions, feet (metres): 304·4 × 50·5 × 19 *(92·8 × 15·4 × 5·8)*
Main engines: 2—16-cyl 58D-4R diesels; 9 000 hp = 18·7 knots
Range, miles: 9 000 at 18·7 knots
Complement: 110 (plus salvage party of 18)

NATO class-name the same as one of the "Klasma" class cable-ships. Naval manned Arctic salvage and rescue tugs. Two more, *Yaguar* and *Bars*, operate with the merchant fleet. This class has an interesting underwater shape with a large protruding bulb at the forefoot.
Built at Admiralty Yard, Leningrad in 1975-77.
Carry salvage pumps, diving and fire-fighting gear as well as a high-line for transfer of personnel.

Radar: Two Don 2.

PAMIR *6/1979, H. W. van Boeijen*

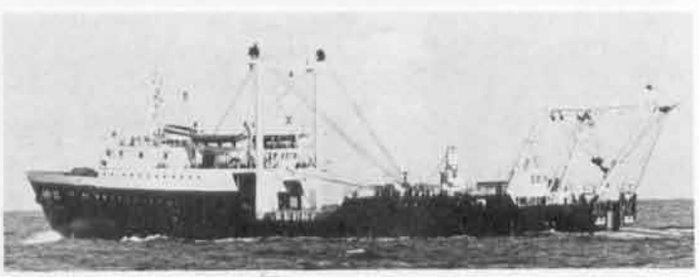
10 "SURA" CLASS

KIL 1, 2, 21, 22, 25, 27, 29, 31, 32, 33

Displacement, tons: 2 370 standard; 3 150 full load
Dimensions, feet (metres): 285·4 × 48·6 × 16·4 *(87 × 14·8 × 5)*
Main engines: Diesel-electric; 2 240 bhp = 13·2 knots
Complement: 73

Heavy lift ships built as mooring and buoy tenders between 1965 and 1972 in East Germany. 65 ton and 5 ton lifts with stern cage.

"SURA" Class



KIL 22 *1974*

2 "OREL" CLASS SALVAGE TUGS

SB 38 **SB 43**

Displacement, tons: 1 760 full load
Dimensions, feet (metres): 201·2 × 39·2 × 18·1 *(61·4 × 12 × 5·5)*
Main engines: 2 diesels = 14 knots

Class of salvage and rescue tugs normally operated by Ministry of Fisheries with the fishing fleets. Naval manned. Built in Finland in late 1950s and early 1960s.

SB 43 *3/1974*

10 "KATUN" CLASS (SALVAGE AND RESCUE TUGS)

PDS 96, 98, 123, 124, 209, 282 +4

Displacement, tons: 1 016 full load
Dimensions, feet (metres): 205·3 × 33·1 × 11·5 *(62 × 10·1 × 3·5)*
Main engines: 2 diesels; 2 shafts; 4 000 hp = 17 knots
Range, miles: 2 000 at 17 knots
Complement: 32

Built in USSR 1970-78. Equipped for fire-fighting and rescue.

Radar: One Don 2.

PDS 96 *1970*

14 "NEPTUN" CLASS

KIL 3, 5, 6, 7, 9, 11-18, CHERNOMORETS

Displacement, tons: 700 light; 1 230 standard
Dimensions, feet (metres): 187·9 × 37·4 × 10·8 *(57·3 × 11·4 × 3·3)*
Main engines: 2 turbines; 2 500 hp = 12 knots
Complement: 25

Mooring tenders similar to Western boom defence vessels. Built in 1957-60 by Neptun Rostock. Have a crane of 75 tons lifting capacity on the bow. One of this class is now based at Murmansk for the Maritime Fleet. She is acting as a diving vessel for hydrogeologists and construction personnel.

Transfer: One to Viet-Nam.

"NEPTUN" Class *1973*

2 Ex-"T 43" CLASS

SS 13, SS 15

Details under Mine Warfare Forces. Carry recompression chambers and diving bells. Stern lift but no rescue chamber.

SUBMARINE RESCUE SHIPS

1 "NEPA" CLASS

KARPATY

Displacement, tons: 3 500 standard; 5 000 full load
Dimensions, feet (metres): 410·1 × 52·5 × 16·4 *(125 × 16 × 5)*
Main engines: 2 diesels; 6 000 shp; 2 shafts = 20 knots
Complement: 270

Submarine rescue and salvage ship of improved design with a special high stern which extends out over the water for rescue manoeuvres with a 600 ton lift. Several other lifting points provided. Has several rescue bells and observation chambers. Completed 1968.

Radar: Two Don 2.
IFF: High Pole B.

"NEPA" Class

KARPATY *1972, A. Nubert*

11 "VALDAY" CLASS (Ex-"T 58" CLASS)

KHAZBEK KHIBINY VALDAY ZANGEZUR
SS 30, 35, 38, 40, 47, 50, 53

Displacement, tons: 725 standard; 850 full load
Dimensions, feet (metres): 229·6 × 29·5 × 7·9 *(70 × 9 × 2·4)*
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 18 knots
Complement: 82

Basically of similar design to that of the "T 58" class fleet minesweepers, but they were completed as emergency salvage vessels and submarine rescue ships at Leningrad in 1961-62. Equipped with diving bell, recompression chamber and emergency medical ward. Have stern lift and rescue chamber aft.

Radar: Ball End.

Transfer: One to India (*Nistar* ex-SS 48) in 1971.

"VALDAY" Class *1973*

TRANSPORTS AND CARGO SHIPS

Notes: (a) In addition to the following some 40 other cargo ships/transports have naval connections but, as with all such ships of the USSR, it is virtually impossible to tell which side of the naval/merchant fence they lie.
(b) There is also a number of self-propelled barracks ships.

1 "AMGUEMA" CLASS

YAUZA

Displacement, tons: 15 100 full load
Dimensions, feet (metres): 436·4 × 62·3 × 28·2 *(133 × 19 × 8·6)*
Main engines: Diesel-electric; 7 200 bhp; 1 shaft = 15 knots

Built in Kherson in 1974. Ice-strengthened. Cargo capacity 6 500 tons.

Radar: Two Don 2.

3 "KOLOMNA" CLASS

KRASNOARMEISK KUZNETSK MEGRIYA

Displacement, tons: 6 700 full load
Dimensions, feet (metres): 335·9 × 47·2 × 21·6 *(102·4 × 14·4 × 6·6)*
Main engines: Compound 4-cyl with LP turbine; 1 shaft; 2 450 ihp = 12·5 knots
Range, miles: 6 900 at 12 knots
Complement: 44

Coal burning sisters of the now deleted "Atrek" class of submarine depot ships. Cargo capacity 3 600 tons.

Radar: One Don 2 or Neptun.

4 "CHULYM" CLASS

INSAR KAMCHATKA KUZNETSKY SEVERODONETSK

Displacement, tons: 5 050 full load
Dimensions, feet (metres): 310·6 × 44·3 × 19·7 *(94·7 × 13·5 × 6)*
Main engines: Compound 4-cyl with LP turbine; 1 650 ihp = 11·5 knots
Range, miles: 5 500 at 11 knots
Complement: 40

Built by Stocznia Szczecinska, Poland from 1953-57. Sixteen others of this B 32 type operate with the merchant navy.

Radar: One Don 2.

2 "ANDIZAN" CLASS

ONDA POSET

Displacement, tons: 6 200 full load
Dimensions, feet (metres): 341·1 × 47·6 × 21·7 *(104 × 14·5 × 6·6)*
Main engine: 1 diesel; 1 shaft; 2 500/3 250 hp = 12·5/14 knots
Range, miles: 6 000 at 12 knots
Complement: 43

Cargo ships of 3 900 tons capacity, part of a class of about 50 merchant ships. Built at Neptun, Rostock 1960-61.

Radar: One Don 2.

2 "DONBAS" CLASS

ANADYR SVIR

Displacement, tons: 7 200
Dimensions, feet (metres): 354 × 47·6 × 23 *(108 × 14·5 × 7)*
Main engines: Compound steam recip with LP turbine; 1 shaft; 2 500 ihp = 11·5 knots

Coal burning transports with cargo capacity of 3 600 tons. Originally Type B31 colliers built at Stocznia Szczecinska, Poland in 1955

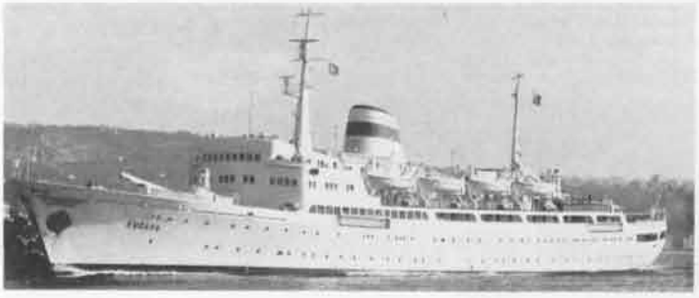
1 "MIKHAIL KALININ" CLASS

KUBAN (ex-*Nadeshda-Krupskaya*)

Displacement, tons: 6 400 full load
Dimensions, feet (metres): 401 × 52·5 × 16·4 *(122·2 × 16 × 5)*
Main engines: 2 MAN 6-cyl diesels; 2 shafts; 8 000 bhp = 18 knots
Range, miles: 8 100 at 17 knots

Built in 1963 by Mathias Thesen Werft, Wismar, East Germany. Part of "Mikhail Kalinin" class originally to have been 24 ships of which only 19 were completed 1958-64. Name changed on transfer to naval service.
Employed under naval command as personnel support ship for the Soviet Mediterranean Squadron. Accommodation for 350 passengers and can carry 1 000 tons of stores.

Radar: Two Don 2.



KUBAN *9/1976, Michael D. J. Lennon*

4 "PARTIZAN" CLASS

PECHORA PINEGA TURGAY UFA

Displacement, tons: 2 850 full load
Dimensions, feet (metres): 291·3 × 42·3 × 16·4 *(88·8 × 12·9 × 5)*
Main engine: 1 diesel; 2 080 hp = 12·8 knots
Range, miles: 4 000 at 12 knots
Complement: 25

Built at Turnu Severin S.Y., Romania 1975-76. Have three 10 ton cranes.
Basically small container ships with 20 similar in merchant fleet. Cargo capacity 3 200 tonnes.

Radar: One Don 2.

TURGAY *1/1980, Selçuk Emre*

10 "KEYLA" CLASS

MEZEN, ONEGA, PONOI, RITSA, TERIBERKA, TULOMA, TVERTSA, UNZA, USSURIY, YERUSLAN

Displacement, tons: 2 000 full load
Dimensions, feet (metres): 258·4 × 37 × 15·1 *(78·8 × 11·3 × 4·6)*
Main engine: 1 diesel; 1 000 hp = 11·5 knots
Range, miles: 4 200 at 11 knots
Complement: 26

Built 1959-61 in Budapest. Cargo ships. Capacity 1 100 tons.

12 "MUNA" CLASS

Displacement, tons: 400
Dimensions, feet (metres): 164 × 26·2 × 9·8 *(50 × 8 × 3)*
Main engine: 1 diesel = 12 knots
Complement: 40

Torpedo transports with large crane amidships

"MUNA" Class *MOD*

8 "MAYAK" CLASS

BUZULUK, ISHIM, LAMA, MYUS, NEMAN, RIONY, ULMA, VYTEGRA

Displacement, tons: 600
Dimensions, feet (metres): 177 × 30·2 × 12·1 *(54 × 9·2 × 3·7)*
Main engine: 1 diesel; 830 hp = 12 knots

Converted trawlers carrying refrigerated stores. Sister ships to AGIs.

BUZULUK *MOD*

10 "LENTRA" CLASS

ALMA, KASHA, UFFA, UGRA, RUZA +5

Victualling transports. Details under AGIs. Being phased out.

2 "MP 4" CLASS

Ex-amphibious craft of 780 tons and 10 knots.

"MP 4" Class *1979, USN*

5 "MP 6" CLASS

BIRA, BUREYA, IRGIZ, KHOPER, VOLOGDYA

Ex-amphibious craft of 2 100 tons, one 1 000 hp diesel and 12 knots. 246 ft *(75 m)* long. Bow doors now welded shut.

5 "TELNOVSK" CLASS

BUROVESTNIK, ISHIM, LAG +2

Displacement, tons: 1 650 full load
Dimensions, feet (metres): 229·6 × 32·8 × 13·1 *(70 × 10 × 4)*
Main engines: 4 diesels; 1 600 hp = 10 knots

Light freighters built at Budapest 1949-57. Five sister ships serve as naval survey vessels.

Radar: Neptun.

8 "KHABAROV" CLASS

Displacement, tons: 600 full load
Dimensions, feet (metres): 152·5 × 26·2 × 10·5 *(46·5 × 8 × 3·2)*
Main engine: Diesel; 600 hp; 1 shaft = 9·5 knots
Range, miles: 1 130 at 9·5 knots
Complement: 30

Built in USSR in 1950s.

Radar: One Don or Neptun.

"KHABAROV" Class *6/1978, USN*

3 "SEKSTAN" CLASS

VTR 3, 23, 24

Displacement, tons: 280 standard; 345 full load
Dimensions, feet (metres): 133·8 × 39·4 × 14·1 *(40·8 × 12 × 4·3)*
Main engine: 1 diesel; 400 hp = 10 knots
Complement: 24

Built in Finland in late 1950s.

Radar: One Neptun.

TORPEDO OPERATING/PATROL AND TARGET CRAFT

Note: A number of "Kronshtadt" class has been converted for torpedo recovery.

4 "POTOK" CLASS (TORPEDO EXPERIMENTAL SHIPS)

OS-100 OS-138 OS-145 OS-225

Displacement, tons: 850
Dimensions, feet (metres): 222·1 × 29·8 × 7·5 *(67·7 × 9·1 × 2·3)*
Torpedo tubes: 4—21 in *(533 mm)* (quad)
Main engines: 2 diesels; 2 shafts; 4 000 hp = 18 knots

Used for torpedo trials in Black Sea. Torpedo tubes fitted on fo'c's'le with large recovery crane aft. Built since 1977.

Soviet type name: Opytnoye sudno meaning experimental ship.

OS-225 *1978*

20 "SHELON" CLASS

Displacement, tons: 200
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Main engines: Diesels = 25 knots
Complement: 20

Built on an "Osa" type hull since 1978. Built-in torpedo recovery ramp aft.

Transfer: One to Viet-Nam.

"SHELON" Class *1979*

90 "POLUCHAT I, II and III" CLASSES

Displacement, tons: 70 standard; 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2 MGs (1 twin) (in some)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 20 knots
Range, miles: 1 500 at 10 knots
Complement: 15

Employed as specialised or dual purpose torpedo recovery vessels and/or patrol boats. They have a stern slipway. Several exported as patrol craft. Some used by KGB.

Radar: One Spin Trough.

Transfers: Algeria, Angola, Equatorial Guinea, Guinea-Bissau, India, Mozambique, Syria, Tanzania, South Yemen.

"POLUCHAT I" Class *10/1975, MOD*

18 "OSA" CLASS

Details as in Light Forces with armament removed. Half used as control craft and the other half as target vessels. Control craft use Square Tie radar while the targets carry radar reflectors and heat generators.

TENDERS/PATROL CRAFT

Note: A considerable number of assorted types and classes is employed on experimental work.

4 "ONEGA" CLASS

GKS 52 GKS 95 GKS 283 +1

Displacement, tons: 2 150 standard; 2 500 full load
Dimensions, feet (metres): 282·1 × 34·4 × 18 *(86 × 10·5 × 5·5)*
Main engines: Gas turbines = 20 knots
Complement: 45

First seen in September 1973. A heavy looking ship with a high foc'sle running to the mainmast which is alongside the funnel. A low bridge with a high trunked foremast. Helicopter platform but no hangar. Probably used as hydroacoustic ships.

20 "T 43" CLASS

GKS 11-26, 42, 45, 46, 49

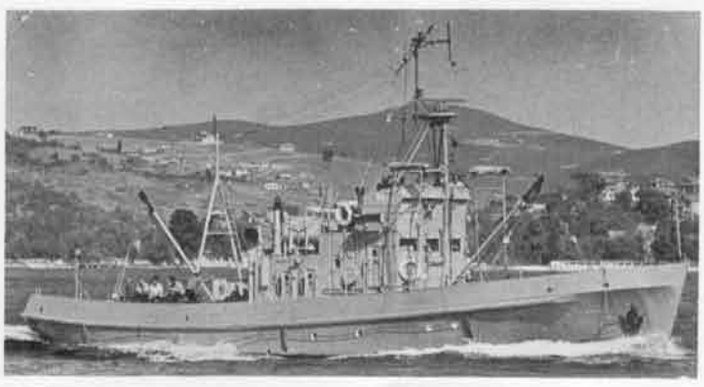
Details under Mine Warfare Forces. Fitted with davits aft for laying hydroacoustic buoys for measuring ships' noise signatures.

? "NYRYAT I" CLASS

Displacement, tons: 145
Dimensions, feet (metres): 93 × 18 × 5·5 *(28·4 × 5·5 × 1·7)*
Gun: 1—12·5 MG (in some)
Main engine: Diesel; 1 shaft; 450 hp = 12·5 knots
Range, miles: 1 500 at 10 knots
Complement: 15

Built from 1955. Can operate as patrol craft or diving tenders.

Transfers: Albania, Cuba, Iraq, Viet-Nam (2), North Yeman.



"NYRYAT" Class

2 "DALDYN" CLASS

Displacement, tons: 260
Dimensions, feet (metres): 103·6 × 23·9 × 9·2 *(31·7 × 7·3 × 2·8)*
Main engine: 1 diesel; 1 300 shp = 9 knots
Complement: 13

First seen in May 1973. Of "Kareliya" class trawler design with a high bridge.

DALDYN *1973*

2 "YELVA" CLASS

Displacement, tons: 295
Dimensions, feet (metres): 132·8 × 26·2 × 6·6 *(40·5 × 8 × 2)*
Main engines: Diesels = 12·5 knots

Diving tenders built in early 1970s with two 1·5 ton cranes.

Radar: One Spin Trough.

Transfers: One to Cuba 1973, one to Libya 1977.

"YELVA" Class *1973*

FIRE/PATROL CRAFT

35 "POZHARNY I" CLASS

Displacement, tons: 180
Dimensions, feet (metres): 114·5 × 20 × 6 *(34·9 × 6·1 × 1·8)*
Guns: 4—12·7 mm or 14·5 mm (in some)
Main engines: 2 diesels; 1 shaft; 1 800 hp = 12·5 knots

Built in the USSR in mid-1950s. Harbour fire boats but can be used for patrol duties.

"POZHARNY I" Class

WATER CARRIERS

2 "MANYCH" CLASS (WATER TANKERS)

MANYCH **TAGIL**

Displacement, tons: 8 600 full load
Dimensions, feet (metres): 377·2 × 49·2 × 23 *(115 × 15 × 7)*
Guns: 4—57 mm (twins) (see note)
Main engines: 2 diesels; 9 000 shp; 2 shafts = 18 knots
Complement: 90

Completed 1972 and 1976 in Kaliningrad and Vyborg. A smaller edition of the *Boris Chilikin* but showing the new interest in custom-built replenishment ships. The high point on the single gantry is very similar to that on *Boris Chilikin*'s third gantry. Both ships reported in use as distilled water-carriers with armament removed—possibly because of problems with their operation as small replenishment ships.

Radar: Search: Strut Curve.
Fire control: Two Muff Cob.
Navigation: Don Kay.

MANYCH *9/1979*

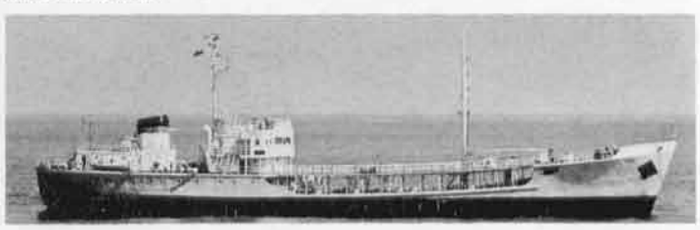
13 "VODA" CLASS

ABAKAN, SURA
MVT 6, 9, 10, 16, 17, 18, 20, 21, 24, 134, 138

Displacement, tons: 2 100 standard; 3 100 full load
Dimensions, feet (metres): 267·3 × 37·7 × 14 *(81·5 × 11·5 × 4·3)*
Main engines: 2 diesels; 1 600 hp; 2 shafts = 12 knots
Complement: 40

Built in 1956 onwards. No armament.

Radar: One Neptun.



SURA *3/1979, MOD(N)*

DEGAUSSING SHIPS

1 "KHABAROV" CLASS

KHABAROV

Displacement, tons: 600 full load
Dimensions, feet (metres): 152·5 × 26·2 × 10·5 *(46·5 × 8 × 3·2)*
Main engine: Diesel; 1 shaft; 600 bhp = 9·5 knots
Range, miles: 1 130 at 9·5 knots
Complement: 30

Steel-hulled built in USSR in 1950s. Prominent deckhouse and stern anchors. One of class, *Kilat*, transferred to Indonesia 1961—subsequently disposed of. Same class listed under Transports.

30 "SEKSTAN" CLASS

Details as in Transports section.

ICEBREAKERS

Note: All these ships are operated by Ministry of Merchant Marine except for the six "Dobrinya Nikitich" class shown as being naval manned. No excuse is offered for including them here as they are an indispensable part of many operations not only in the Baltic, Northern and Pacific Fleet areas but also on rivers, lakes and canals.

1 PROJECTED LARGE NUCLEAR POWERED

RUSSIYA

Main engines: Nuclear reactors; steam turbines; 150 000 hp

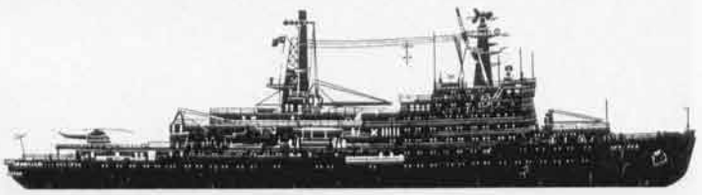
Reported as in the design stage in 1979 for delivery in 1984-85.

2 "ARKTIKA" CLASS

ARKTIKA **SIBIR**

Displacement, tons: 19 300 standard; 23 460 full load
Dimensions, feet (metres): 446·1 × 91·8 × 36·1 *(136 × 28 × 11)*
Aircraft: Helicopter with hangar
Guns: Fitted for but not with 4—76 mm (twins)
Main engines: 2 nuclear reactors; steam turbines; 75 000 shp; 3 shafts aft
Speed, knots: 21

Built at Baltic Yard, Leningrad. *Arktika* launched 26 December 1972, started trials on 30 November 1974 and was operational late 1975. Fitted with new type of reactor, the development of which may have retarded these ships' completion. *Sibir* launched 23 February 1976, completed 7 November 1977 and commissioned 28 December 1977—varies slightly in electronics on foremast from *Arktika*. Civilian manned.



"ARKTIKA" Class

SIBIR *1978*

1 "LENIN" CLASS

LENIN

Displacement, tons: 15 940 standard; 19 240 full load
Dimensions, feet (metres): 406·7 × 87·9 × 34·4 *(124 × 26·8 × 10·5)*
Aircraft: 2 helicopters
Main engines: 3 pressurised water-cooled nuclear reactors, 4 steam turbines; 3 shafts; 44 000 shp = 19·7 knots
Complement: 230

The world's first nuclear powered surface ship to put to sea. Reported to have accommodation for 1 000 personnel. Civilian manned.

Construction: Built at the Admiralty Yard, Leningrad. Launched on 5 December 1957. Commissioned on 15 September 1959.

Engineering: The original reactors, prototype submarine variety, were replaced during refit at Murmansk 1966-72. The new reactors presumably have a longer core-life than the 18 months of their predecessors. The turbines were manufactured by the Kirov plant in Leningrad. Three propellers aft, but no forward screw.

Operation: Can maintain a speed of 3-4 knots in 8 ft ice, giving a path of some 100 ft.

LENIN *1972*

3 "YERMAK" CLASS

Name	*No.*	*Builders*	*Commissioned*
YERMAK	—	Wärtsilä, Helsinki	30 June 1974
ADMIRAL MAKAROV	—	Wärtsilä, Helsinki	2 June 1975
KRASIN	—	Wärtsilä, Helsinki	28 Apr 1976

Displacement, tons: 20 241 full load
Dimensions, feet (metres): 442·8 × 85·3 × 36·1 *(135 × 26 × 11)*
Aircraft: 2 helicopters
Main engines: 9 Wärtsilä-Sulzer 12-cyl 12 ZH 40/48 diesels of 4 600 bhp each (total 41 400 hp) with Stromberg Ab generators feeding three Stromberg electric motors of total 36 000 shp; 3 shafts
Speed, knots: 19·5
Range, miles: 40 000 at 15 knots
Complement: 118 plus 28 spare berths

The Soviet Union ordered three large and powerful icebreakers on 29 April 1970 from Wärtsilä Shipyard, Helsinki, for delivery in 1974, 1975 and 1976. Six Wärtsilä auxiliary diesels, 7 200 bhp. Propelling and auxiliary machinery controlled electronically. These are the first vessels to be fitted with Wärtsilä mixed-flow air-bubbling system to decrease friction between hull and ice. *Yermak* launched 7 September 1973. *A. Makarov* laid down 10 September 1973 and launched 26 April 1974. *Krasin* laid down 9 July 1974, launched 18 April 1975. Civilian manned.

ADMIRAL MAKAROV *1975, Wärtsilä*

5 "MOSKVA" CLASS

KIEV LENINGRAD MOSKVA MURMANSK VLADIVOSTOK

Displacement, tons: 13 290 standard; 15 360 full load
Dimensions, feet (metres): 400·7 × 80·3 × 34·5 *(122·2 × 24·5 × 10·5)*
Aircraft: 2 helicopters
Main engines: 8 Sulzer diesel-electric; 3 shafts; 22 000 shp (26 000 in *Murmansk* and *Vladivostok*) = 18 knots
Oil fuel, tons: 3 000
Range, miles: 20 000
Complement: 145

Civilian manned.

Construction: Built by Wärtsilä Shipyard, Helsinki. *Moskva* was launched on 10 January 1959 and completed in June 1960. *Leningrad* was laid down in January 1959. Launched on 24 October 1959, and completed in 1962. *Kiev* was completed in December 1965. *Murmansk* was launched on 14 July 1967 (completed May 1965) and *Vladivostok* on 28 May 1968 (completed April 1969).

Design: Designed to stay at sea for a year without returning to base. The concave embrasure in the ship's stern is a housing for the bow of a following vessel when additional power is required. There is a landing deck for helicopters and hangar space for two aircraft.

Engineering: Eight generating units of 3 250 bhp each. Main diesels of the Wärtsilä-Sulzer 9 MH 51 type. Four separate machinery compartments. Two engine rooms, four propulsion units in each. Three propellers aft. No forward propeller. Centre propeller driven by electric motors of 11 000 hp and each of the side propellers by motors of 5 500 hp. Two Wärtsilä-Babcock & Wilcox boilers for heating and donkey work.

Operation: *Moskva* has four pumps which can move 480 tonnes of water from one side to the other in two minutes to rock the icebreaker and wrench her free of thick ice.

LENINGRAD *1964*

2 "KAPITAN SOROKIN" CLASS

Name	*No.*	*Builders*	*Commissioned*
KAPITAN SOROKIN	—	Wärtsilä, Helsinki	14 July 1977
KAPITAN NIKOLAYEV	—	Wärtsilä, Helsinki	31 Jan 1978

Displacement, tons: 14 900
Dimensions, feet (metres): 432·6 × 86·9 × 27·9 *(131·9 × 26·5 × 8·5)*
Aircraft: 2 helicopters
Main engines: 6 Wärtsilä-Sulzer 9 ZL 40/48 diesels; 24 800 bhp; 6 AC generators; 22 000 shp; 3 shafts with DC motors
Speed, knots: 19
Complement: 76 (16 spare berths)

Shallow draught polar icebreakers fitted with Wärtsilä bubbling system. Fitted with single cabins (except spare berths), sauna, swimming pool, gymnasium, library, cinema and hospital. *K. Sorokin* laid down 5 December 1975, launched 10 December 1976. *K. Nikolayev* laid down 15 December 1976.

KAPITAN SOROKIN *1977, Wartsila*

2 "VASILYEVICH GRANITSYN" CLASS

VASILYEVICH GRANITSYN YURY KONSTANTINOVICH

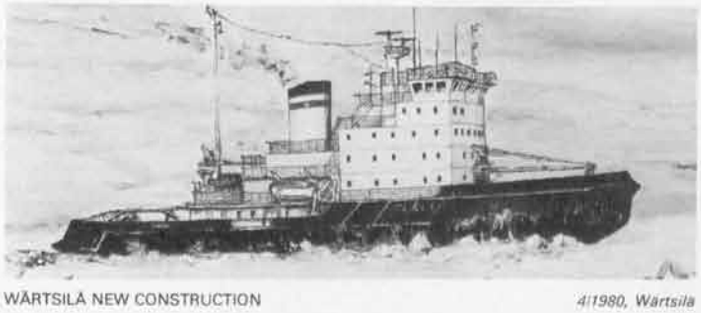
Displacement, tons: 15 000 approx
Dimensions, feet (metres): 432·6 × 86·9 × 27·9 *(131·9 × 26·5 × 8·5)*
Main engines: Diesel-electric; 6 Wärtsilä-Sulzer 9 ZL 40/48 diesels; 24 800 hp; electric motors; 22 000 hp; 2 shafts = 19 knots

Ordered in December 1978 from Wärtsilä, the first ship delivered in autumn 1980 the second in summer 1981. A development of the "Kapitan Sorokin" design these ships are planned for North Siberian operations in shallow deltas at ambient temperatures down to −50°C. Fitted with Wärtsilä bubbling equipment.

3 NEW CONSTRUCTION

Displacement, tons: 5 000 approx
Dimensions, feet (metres): 283·4 × 68·2 × 19·7 *(86·4 × 20·8 × 6)*
Main engines: 4 Wärtsilä Vasa 8 R 32 diesels; 2 shafts; cp propellers; 12 400 hp
Speed, knots: 16·5

Ordered from Wärtsilä, Helsinki on 3 April 1980, one to be delivered end 1982 and others in 1983. For use in Barents Sea, the Baltic and the Sea of Okhotsk. To be fitted with Wärtsilä bubbling gear.



WÄRTSILÄ NEW CONSTRUCTION *4/1980, Wärtsilä*

3 "KAPITAN BELOUSOV" CLASS

Name	*No.*	*Builders*	*Commissioned*
KAPITAN BELOUSOV	—	Wärtsilä, Helsinki	1955
KAPITAN MELEKHOV	—	Wärtsilä, Helsinki	1957
KAPITAN VORONIN	—	Wärtsilä, Helsinki	1956

Displacement, tons: 4 375 to 4 415 standard; 5 350 full load
Dimensions, feet (metres): 273 × 63·7 × 23 *(83·3 × 19·4 × 7)*
Main engines: Diesel-electric; 6 Polar 8-cyl; 10 500 bhp = 14·9 knots
Oil fuel, tons: 740
Complement: 120

The ships have four screws, two forward under the forefoot and two aft. Civilian manned. *K. Belousov* launched 1954, *K. Voronin* 1955 and *K. Melekhov* 19 October 1956.

KAPITAN BELOUSOV *1970, Michael D. J. Lennon*

22 "DOBRYNYA NIKITICH" CLASS

AFANASY NIKITIN (ex-*Ledokol 2*) (1962)
BURAN (1966)*
DOBRYNYA NIKITICH (1960)*
FYODOR LITKE (1970)
GEORGI (1967)**
ILIA MUROMETS (1966)*
IVAN MOSKVITIN (1971)
IVAN KRUZENSTERN (ex-*Ledokol 6*) (1964)
KHARITON LAPTEV (ex-*Ledokol 3*) (1962)
P. PAKHTUSOV (1966)**
PERESVET (1969)*
PLUG (1961)
PURGA (1961)
SADKO (1968)*
SEMYON CHELYUSKIN (ex-*Ledokol 8*) (1965)
SEMYON DEZHNEV (1971)
VASILY POYARKOV (ex-*Ledokol 4*) (1963)
VASILY PRONCHISHTCHEV (ex-*Ledokol 1*) (1961)
VLADIMIR RUSANOV (ex-*Ledokol 7*) (1964)
VYUGA (1961)*
YEROFEI KHABAROV (ex-*Ledokol 5*) (1963)
YURY LISYANSKY (ex-*Ledokol 9*) (1965)

* Naval manned.
** Occasionally used for hydrographic work in the Arctic.

Displacement, tons: 2 000 standard; 2 675 full load
Measurement, tons: 2 305 gross (ships vary)
Dimensions, feet (metres): 223·1 × 59·1 × 19·7 *(68 × 18 × 6)*
Guns: 2—57 mm; 2—25 mm *(Peresvet, Purga, Sadko* and *Vyuga)*
Main engines: 3 shafts (1 bow, 2 stern); 5 400 hp = 13·8 knots
Range, miles: 5 500 at 12 knots
Complement: 100

All built at Admiralty Yard, Leningrad between 1961 (first ship, *Vasily Pronchishtchev*) and 1971 (last ship, *Ivan Moskvitin*). Divided between the Baltic, Black Sea and Far East. Some of later ships have bow propeller.

Radar: Two Don 2.

SEMYEN DEZHNEV *12/1980, L. and L. van Ginderen*

6 "KAPITAN CHECHKIN" CLASS

Name	*No.*	*Builders*	*Commissioned*
KAPITAN CHECHKIN	—	Wärtsilä	6 Nov 1977
KAPITAN PLAHIN	—	Wärtsilä	30 Dec 1977
KAPITAN CHADAYEV	—	Wärtsilä	7 Apr 1978
KAPITAN KRUTOV	—	Wärtsilä	6 June 1978
KAPITAN BUKAYEV	—	Wärtsilä	29 Sep 1978
KAPITAN ZARUBIN	—	Wärtsilä	10 Nov 1978

Displacement, tons: 2 240
Dimensions, feet (metres): 254·5 × 53·5 × 10·7 *(77·6 × 16·3 × 3·3)*
Main engines: Diesel-electric; Wärtsilä 12V22 diesels; 6 330 hp; 3 shafts; 4 490 hp = 14 knots
Complement: 28

Ordered 16 May 1975. *K. Chechkin* laid down 22 October 1976 and launched 29 April 1977. *K. Plahin* laid down 24 January 1977, launched 8 August 1977. *K. Chadayev* laid down 16 February 1977, launched 13 October 1977. *K. Krutov* laid down 1 July 1977, launched 11 January 1978. *K. Bukayev* laid down 9 September 1977. Designed for service on Volga-Baltic waterways and Siberian rivers. Fitted with three rudders, air-bubbling system and an automatic lowering system for masts, radar and aerials.

KAPITAN CHADAYEV (operating bubbling equipment) *1978, Wärtsilä*

0 + 7 NEW CONSTRUCTION

Displacement, tons: 2 000 approx
Dimensions, feet (metres): 251·9 × 54·4 × 8·2 *(76·8 × 16·6 × 2·5)*
Main engines: Diesel-electric; 3 diesels; 6 540 hp; 4 DC electric motors; 5 168 shp

Contract signed by Wärtsilä in December 1980. This design is unique, having a draught shallower than any previous ice-breaker. Designed for service in temperatures of −50°C on Siberian rivers and deltas.

WÄRTSILÄ NEW CONSTRUCTION *1980, Wärtsilä*

3 "KAPITAN IZMAYLOV" CLASS

Name	*No.*	*Builders*	*Commissioned*
KAPITAN M. IZMAYLOV	—	Wärtsilä, Helsinki	15 June 1976
KAPITAN KOSOLAPOV	—	Wärtsilä, Helsinki	14 July 1976
KAPITAN A. RADZABOV	—	Wärtsilä, Helsinki	5 Oct 1976

Displacement, tons: 2 045
Dimensions, feet (metres): 185·3 × 51·5 × 13·8 *(56·5 × 15·7 × 4·2)*
Main engines: Diesel-electric; Diesels; 4 100 hp; 2 shafts; 3 400 shp; 2 rudders
Speed, knots: 13

Contract signed with Wärtsilä, Helsinki on 22 March 1974 for the building of these three icebreakers for delivery in 1976. All fitted with Wärtsilä air-bubbling system. Machinery by Wärtsilä Vasa. Electrical machinery by Oy Strömberg Ab.
Laid down: *K. Izmaylov* 12 June 1975 (launched 11 December 1975), *K. Kosolapov* 19 August 1975 (launched 13 February 1976), *K. Radzabov* 17 June 1975 (launched 9 March 1976). Civilian manned.

KAPITAN IZMAYLOV *10/1976, Wärtsilä*

5 "STROPTIVY" CLASS

SIBIRSKY **STAKHANOVETS** **STROPTIVY** **+2**

Displacement, tons: 4 200
Dimensions, feet (metres): 238·5 × 59 × 21·3 *(72·7 × 18 × 6·5)*
Main engines: Two Wärtsilä-SEMT-Pielstick 6 PC 2·5 L-400 diesels; 2 shafts with cp propellers; 7 600 hp
Speed, knots: 15
Complement: 40 (plus 12 spare berths)

Stroptivy delivered by Wärtsilä, Helsinki on 30 November 1979. *Stakhanovets* on 29 February 1980 and *Sibirsky* on 2 July 1980 with two more in 1980. Designed as icebreaking salvage vessels, serving in support of Arctic fishing fleets. Can carry out repair, fire-fighting, salvage and towing. Have two 5 ton and two 3 ton cranes, four foam generators, a diving centre with oxy-acetylene equipment and TV monitors, a hospital and a bow thruster.

STROPTIVY *11/1979, Wärtsilä*

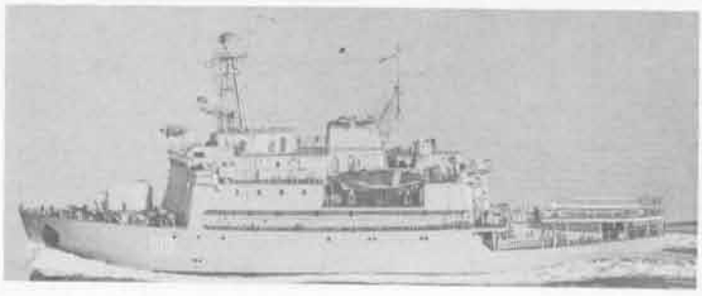
ARMED ICEBREAKERS

6 "SUSANIN" CLASS

AISBERG
DUNAY
IMENI XXV SYEZDA KPSS
IVAN SUSANIN
NEVA
RUSLAN

Of similar major characteristics to Icebreakers of "Dobrynya Nikitich" class but lengthened by 80 ft and modified with new bridge structure, twin 76 mm forward, two 30 mm Gatling guns aft (in all but *Ruslan*) and a helicopter platform. Operated by KGB.

"SUSANIN" Class



AISBERG *1975*

TUGS

14 "SORUM" CLASS

AMUR
BREST
KAMCHATKA
PRIMORY
SAKHALIN
ZABAIKALYE
MB 19
MB 25
MB 26
MB 30
MB 58
MB 148
MB 304
MB 307

Displacement, tons: 1 630
Dimensions, feet (metres): 190·2 × 41·3 × 15·1 *(58 × 12·6 × 4·6)* (see note)
Guns: 4—30 mm (twins) (3 twins—*Amur, Kamchatka, Sakhalin*) (see note)
Main engines: Diesel-electric; 2 100 hp = 14 knots (see note)
Range, miles: 6 750 at 13 knots
Complement: 35

A class of ocean tugs. All are naval manned except named ships which are KGB operated, built in Yaroslavl and Oktyabskoye. MB numbered ships built by Rauma Repola Oy, Nystad, Finland with dimensions 208·3 × 46·9 × 17·1 ft *(63·5 × 14·3 × 5·2 m)*, powered by diesels giving a speed of 13 knots. First group completed in 1972, remainder launched in 1976-77 and completed in 1978.

Guns: All are fitted for four 30 mm (twins).

Radar: Two Don 2.

MB 58 *1977, MOD*

50 "OKHTENSKY" CLASS

Displacement, tons: 950 full load
Dimensions, feet (metres): 156·1 × 34 × 15 *(47·6 × 10·4 × 4·6)*
Main engines: 2 BM diesels; 2 electric motors; 2 shafts; 1 875 bhp = 14 knots
Oil fuel, tons: 187
Range, miles: 8 000 at 7 knots
Complement: 34

Oceangoing salvage and rescue tugs. Fitted with powerful pumps and other apparatus for salvage. Some may be manned by KGB.

"OKHTENSKY" Class *6/1979, MOD*

3 "GORYN" CLASS

BAYKALSK MB 15 **BIRYUSINSK** MB 18 **BILIBINO** MB 119

Displacement, tons: 2 600
Dimensions, feet (metres): 143·3 × 44·3 × 14·8 *(43·7 × 13·5 × 4·5)*
Main engines: 2 diesels; 3 500 hp; 2 shafts = 13·8 knots
Complement: 40

Built by Hashimoto, Kobe in 1976 and 1977 (MB 18 and 119) and Nichiro, Hakodate in 1976 (MB 15). Rescue tugs with 35 tons bollard pull fitted with fire-fighting gear. Sister ship *Bolsheretsk* built at Hakodate in 1977 foundered February 1979.

Radar: Don 2.

BAYKALSK *6/1979, MOD*

10 "ROSLAVL" CLASS

ALAID, GERKULES, MIKULA, URAL, V. TREFOLEV, MB 145-147, SB 12, SB 46

Displacement, tons: 1 400 standard; 450 full load
Dimensions, feet (metres): 135·1 × 29·5 × 10·8 *(41·2 × 9 × 3·3)*
Main engines: 1 diesel, 1 200 hp = 13 knots
Complement: 28

Radar: Neptun

FINNISH "530 TON" CLASS

Measurement, tons: 533 gross
Dimensions, feet (metres): 157·1 × 31·3 × 15·5 *(47·9 × 9·5 × 4·7)*
Main engines: Steam = 9·5 knots

Numerous class built in Finland in 1950s. Several now deleted.

EAST GERMAN BERTHING TUGS

Measurement, tons: 233 gross
Dimensions, feet (metres): 114·1 × 27·9 × 9·2 *(34·8 × 8·5 × 2·8)*
Main engines: Diesels = 11·3 knots

Numerous class built in 1970 by Edgar Andre, Magdeburg, East Germany. All originally numbered MB 70 et seq. Some renamed.

EAST GERMAN HARBOUR TUGS

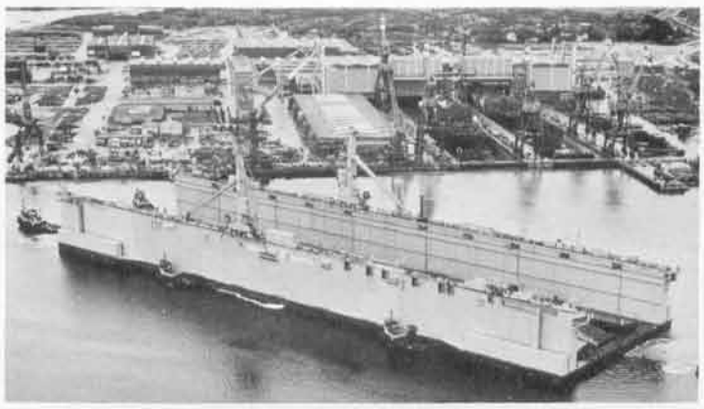
Measurement, tons: 132 gross
Dimensions, feet (metres): 94·5 × 21·3 × 9·8 *(28·8 × 6·5 × 3)*
Main engine: 1 diesel = 10 knots

Very numerous class built in East Germany in 1964.

There are a large number of other tugs available in commercial service which could be directed to naval use.

FLOATING DOCKS

With over twenty different types of floating docks deployed in varying numbers around their coast the Soviet navy is well provided. Some are covered docks for use in Arctic conditions. The largest available are the two 80 000 ton lift docks one of which (made in Japan) is based at Vladivostock and the second (built by Götaverken Arendal, Sweden) ran aground in autumn 1979 while on tow to Murmansk. Rebuilt and delivered safely in 1980.
The dimensions of these docks are 1 082 × 288·6 × 98·4 ft *(330 × 88 × 30 m)*.



Swedish 80 000 ton dock *1979, Götaverken Arendal*

UNITED ARAB EMIRATES

Headquarters' Appointment

Commander, Naval Forces:
Brigadier Muhammad Nabil Madwar

General

This federation of the former Trucial States (Abu Dhabi, Ajman, Dubai, Fujairah, Ras al Khaimah, Sharjah, Umm al Qaiwan) was formed under a provisional constitution in 1971 with a new constitution coming into effect on 2 December 1976.
Following a decision of the UAE Supreme Defence Council on 6 May 1976 the armed forces of the member states were unified and the organisation of the UAE Armed Forces was furthered by decisions taken on 1 February 1978.

Personnel

(a) 1981: 1 200 (80 officers, 1 120 ratings)
(b) Voluntary service

Ports

Mina Zayed (Abu Dhabi), Mina Rashid (Dubai), Mina Sultan (Sharjah), Khor Fakkan (Sharjah-East Coast).

A 500 ton lift floating dock was delivered to Abu Dhabi in 1977 by Blohm and Voss, West Germany.

Mercantile Marine

Lloyd's Register of Shipping:
119 vessels of 158 210 tons gross

LIGHT FORCES

6 "LÜRSSEN TNC 45" CLASS

RODOUM P 4503 +5

Displacement, tons: 230
Dimensions, feet (metres): 147·6 × 23 × 7·5 *(45 × 7 × 2·3)*
Missiles: SSM; 2 Exocet MM40
Guns: 1—76 mm OTO Melara; 2—40 mm (twin)
Main engines: 4 MTU diesels; 14 400 hp; 4 shafts = 40 knots
Complement: 40

Ordered in late 1977 from Lürssen, Vegesack. First two delivered September 1980.

Electronics: Decca Cutlass ESM.

Radar: Surveillance and tracking: PEAB 9LV Mk 2 (Philips USFA 9053 infra-red tracker attached).
Navigation: Decca.

RODOUM *11/1980, W. Globke*

6 VOSPER THORNYCROFT TYPE (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
ARDHANA	P 1101	Vosper Thornycroft	24 June 1975
ZURARA	P 1102	Vosper Thornycroft	14 Aug 1975
MURBAN	P 1103	Vosper Thornycroft	16 Sep 1975
AL GHULLAN	P 1104	Vosper Thornycroft	16 Sep 1975
RADOOM	P 1105	Vosper Thornycroft	1 July 1976
GHANADHAH	P 1106	Vosper Thornycroft	1 July 1976

Displacement, tons: 110 standard; 175 full load
Dimensions, feet (metres): 110 × 21 × 6·6 *(33·5 × 6·4 × 2)*
Guns: 2—30 mm A32 (twin); 1—20 mm A41A (carry 2—2 in flare projectors)
Main engines: 2 Paxman Valenta diesels; 5 400 hp = 30 knots
Range, miles: 1 800 at 14 knots
Complement: 26

A class of round bilge steel hull craft. P 1101-2 and P 1105-6 transported by heavy-lift ships. P 1103 and P 1104 were sailed out. Originally operated by Abu Dhabi.

Radar: Decca TM 1626.

MURBAN *9/1975, John G. Callis*

3 KEITH NELSON TYPE (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
KAWKAB	P 561	Keith Nelson, Bembridge	7 Mar 1969
THOABAN	P 562	Keith Nelson, Bembridge	7 Mar 1969
BANI YAS	P 563	Keith Nelson, Bembridge	27 Dec 1969

Displacement, tons: 32 standard; 38 full load
Dimensions, feet (metres): 57 × 16·5 × 4·5 *(17·4 × 5 × 1·4)*
Guns: 2—20 mm (single)
Main engines: 2 Caterpillar diesels. 750 bhp = 19 knots
Range, miles: 445 at 15 knots
Complement: 11 (2 officers, 9 men)

Of glass fibre hull construction. Originally operated by Abu Dhabi.

Radar: Decca TM 1626.

BANI YAS *11/1976, UAE Armed Forces*

COAST GUARD CRAFT

(under control of Ministry of Interior)

6 "DHAFEER" CLASS (COASTAL PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
DHAFEER	P 401	Keith Nelson, Bembridge	1 July 1968
GHADUNFAR	P 402	Keith Nelson, Bembridge	1 July 1968
HAZZA	P 403	Keith Nelson, Bembridge	1 July 1968
DURGHAM	P 404	Keith Nelson, Bembridge	7 June 1969
TIMSAH	P 405	Keith Nelson, Bembridge	1 June 1969
MURAYJIB	P 406	Keith Nelson, Bembridge	7 June 1970

Displacement, tons: 10
Dimensions, feet (metres): 40·3 × 11 × 3·5 *(12·3 × 3·4 × 1·1)*
Guns: 2—7·62 mm MGs
Main engines: 2 Cummins diesels; 370 bhp = 19 knots
Range, miles: 350 at 15 knots
Complement: 6 (1 officer, 5 men)

Of glass fibre hull construction. Transferred to Ministry of Interior (Marine Police) in July 1977.

TIMSAH *11/1976, UAE Armed Forces*

2 CHEVERTON TYPE

Name	*No.*	*Builders*	*Commissioned*
AL SHAHEEN	—	Cheverton Ltd, Isle of Wight	Feb 1975
AL AQAB	—	Cheverton Ltd, Isle of Wight	Feb 1975

Displacement, tons: 20
Dimensions, feet (metres): 50 × 14 × 4·5 *(15·3 × 4·3 × 1·4)*
Gun: 1 MG
Main engines: 2 General Motors diesels; 2 shafts; 850 bhp = 23 knots
Range, miles: 1 000 at 20 knots
Complement: 8

GRP hull. Originally delivered to the Sharjah Marine Police.

AL SHAHEEN *1975, Roger M. Smith*

6 FAIREY MARINE "SPEAR" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 4·3
Dimensions, feet (metres): 29·8 × 9·2 × 2·6 *(9·1 × 2·8 × 0·8)*
Guns: 2—7·62 mm MGs
Main engines: 2 Perkins diesels of 290 hp = 25 knots
Complement: 3

Order placed in February 1974. Craft delivered between July 1974 and January 1975—five to Abu Dhabi, one to Dubai.

"SPEAR" Class *1974, Faireys*

2 CHEVERTON TYPE (TENDERS)

A 271 **A 272**

Displacement, tons: 3·3
Dimensions, feet (metres): 27 × 9 × 2·7 *(8·2 × 2·7 × 0·8)*
Main engine: 1 Lister RMW3 diesel; 150 hp = 8 knots

Built of GRP. Acquired from Chevertons, Cowes, Isle of Wight in 1975 by Abu Dhabi. A 272 has a 2 ton hoist.

4 "20 ft" COASTAL PATROL CRAFT

Delivered to Sharjah Marine Police in 1977.

1 FAIREY MARINE "INTERCEPTOR" CLASS

25 ft *(7·6 m)* craft with catamaran hull. Powered by twin 135 hp outboard motors—speed 30 knots. Can carry a platoon of soldiers or eight life-rafts. Originally delivered to Dubai.

10 "P 1200" CLASS

Displacement, tons: 10
Length, feet (metres): 39 *(11·9)*
Main engines: 2 Caterpillar diesels; 420 hp = 21 knots
Range, miles: 325 at 18 knots

Built in 1979 by Watercraft, UK.

UNITED KINGDOM

Admiralty Board

Secretary of State for Defence (Chairman):
The Right Hon John W. F. Nott, PC
Minister of State: Ministry of Defence (Vice-Chairman) and Minister of State for Defence Procurement:
The Right Hon Viscount Trenchard of Wolfeton, MC
Parliamentary Under-Secretary of State for Defence for the Royal Navy:
Herbert Keith Speed, MP, RD
Chief of the Defence Staff:
Admiral of the Fleet Sir Terence Lewin, GCB, MVO, DSC
Chief of the Naval Staff and First Sea Lord:
Admiral Sir Henry Leach, GCB, ADC
Chief of Naval Personnel and Second Sea Lord:
Admiral Sir Desmond Cassidi, KCB
Controller of the Navy:
Vice-Admiral Sir Lindsay Bryson, KCB
Chief of Fleet Support:
Vice-Admiral Sir William Pillar
Vice-Chief of the Naval Staff:
Vice-Admiral W. D. M. Staveley

Commanders-in-Chief

Commander-in-Chief, Naval Home Command:
Admiral Sir James Eberle, GCB
Commander-in-Chief, Fleet:
Admiral Sir John Fieldhouse, KCB

Flag Officers

Flag Officer, Naval Air Command:
Rear-Admiral E. R. Anson
Flag Officer, Sea Training:
Rear-Admiral D. M. Eckersley-Maslin
Flag Officer, Gibraltar:
Rear-Admiral D. J. Mackenzie
Flag Officer, Medway:
Rear-Admiral G. M. K. Brewer
Flag Officer, Plymouth:
Vice-Admiral S. A. C. Cassels, CBE
Flag Officer, Portsmouth:
Rear-Admiral A. S. Tippet
Flag Officer, Scotland and Northern Ireland:
Vice-Admiral Sir Thomas Baird, KCB
Hydrographer of the Navy:
Rear-Admiral D. W. Haslam, CB, OBE

General Officers, Royal Marines

Commandant-General, Royal Marines:
Lieutenant-General Sir Steuart Pringle, Bt
Chief of Staff to Commandant-General, Royal Marines:
Major-General D. J. Brewster, MC
Major-General Training Group, Royal Marines:
Major-General J. F. Mottram, MVO, OBE
Major-General Commando Forces, Royal Marines:
Major-General J. J. Moore, OBE, MC, ADC

Diplomatic Representation

British Naval Attaché in Bonn:
Captain D. J. Bradby
British Naval Adviser in Canberra:
Captain R. F. G. Laughton
British Naval Attaché in Moscow:
Captain C. J. Ward
British Naval Adviser in Ottawa:
Commodore J. J. Streatfield-James
British Naval Attaché in Paris:
Captain C. S. Argles
British Naval Attaché in Rome:
Captain C. T. Codrington
British Naval Attaché in Washington:
Rear-Admiral J. B. Hervey

Personnel (including Royal Marines)

(a) 1979: 68 700 (9 600 officers, 59 100 ratings and ORs) plus 3 900 servicewomen
1980: 68 100 (9 600 officers, 58 500 ratings and ORs) plus 3 800 servicewomen
1981: 70 300 (10 000 officers, 60 300 ratings and ORs) plus 4 000 servicewomen
1982 (est): 70 400 (10 000 officers, 60 400 ratings and ORs) plus 3 800 servicewomen
(b) Voluntary service
(c) Regular Reserves (1981): 28 800 men; 100 women
(d) RNR and RMR (1981): 5 100 men; 1 000 women
(e) New RNR Air Branch formed in 1980. Approximately 80 officers, ex-FAA.

Fleet Disposition

First Flotilla (Rear-Admiral D. C. Jenkin) (t.b.r.b. Rear-Admiral J. F. Woodward)
2 "County" class, 2 frigates plus 3 frigate squadrons and 1 destroyer squadron:
1st FS (*Galatea* + 5 frigates)
3rd DS (*Newcastle* + 5 destroyers)
6th FS (*Plymouth* + 7 frigates)

Second Flotilla (Rear-Admiral N. J. S. Hunt, MVO)
2 "County" class, 2 Type 22, 3 frigate squadrons, 1 destroyer squadron:
4th FS (*Cleopatra* + 7 frigates)
5th DS (*Exeter*)
7th FS (*Argonaut* + 5 frigates)
8th FS (*Ariadne* + 8 frigates)

Third Flotilla (Rear-Admiral J. M. H. Cox) (t.b.r.b. Vice-Admiral P. G. M. Herbert, OBE
Hermes, Invincible, Bristol, Intrepid, Endurance

Submarine Command (Vice-Admiral R. R. Squires)
1st Squadron (*Dolphin,* Portsmouth) 6 patrol submarines;
2nd Squadron (Devonport) 5 fleet submarines, 2 patrol submarines;
3rd Squadron (*Neptune,* Faslane) 3 fleet submarines, 3 patrol submarines;
10th Squadron (*Neptune,* Faslane) 3 SSBN

MCM Commands:
1st Squadron (Rosyth), 2nd Squadron (Portsmouth), FPS (Rosyth), 10th Squadron (RNR)

Stand-by Squadron:
Berwick, Sirius

Strength of the Fleet

Type	*Active*	*Building (Projected)*	*Reserve*
SSBNs	3 (+1 refit)	—	—
Submarines—Fleet	8 (+4 refit)	3 (+1)	—
Submarines—Patrol	11 (+5 refit)	—	—
Aircraft Carrier	1	—	—
A/S Carriers	1	2	—
Light Cruisers	5 (+1 refit)	—	—
Destroyers	11	9	—
Frigates	40 (+5 refit)	—	7
Assault Ships (LPDs)	2	—	—
LSLs	6	—	—
LCLs	2	—	—
LCT	1	—	—
LCMs	28	—	—
LCVPs	26	—	—
LCPLs	3	—	—
Offshore Patrol Craft	8	1	—
Large Patrol Craft	11	—	—
Fast Training Boats	3	—	—
MCM Support Ship	1	—	—
Minehunters	17	9	—
Minesweepers—Coastal	15 (+1 refit)	—	—
Minesweepers—Inshore	4	—	—
MSMs	2	(12)	—
Maintenance Ships	2	—	—
Target Ship	1	—	—
Survey Ships	4	—	—
Coastal Survey Ships	4	—	—
Inshore Survey Craft	4	—	—
Ice Patrol Ship	1	—	—
Royal Yacht	1	—	—
Hovercraft	6	—	—
Diving Support Ships	1	1	—
Large Fleet Tankers	7	(1)	—
Support Tankers	2	—	—
Coastal Tankers	7	—	—
Small Fleet Tankers	5	—	—
Helicopter Support Ship	1	—	—
Stores Support Ships	2	—	—
Fleet Replenishment Ships	4	—	—
Store Carrier	1	—	—
MSBVs	10	—	—
Trials Ships	4	—	—
TRVs	9	—	—
Cable Ship	1	—	—
Armament Carriers	2	—	—
Water Carriers	8	—	1
Ocean Tugs	10	—	1
Harbour Tugs	61	—	—
Tenders	55	—	—
RNXS Craft	10	—	—
DG Vessels	2	—	—
TCVs	2	—	—
Diving Tenders	6	—	—

Fleet Air Arm

F/W Aircraft	*Role*	*Deployment*	*No. of sqdns or flights*	*Squadron no.*
Sea Harrier	FTU	Yeovilton	1 Sqdn	700A
Jetstream T2	Observer Training	Culdrose	1 Sqdn	750
Sea Harrier	STOVL	*Hermes*	1 Sqdn	800
Sea Harrier	STOVL	*Invincible*	1 Sqdn	801
Sea Harrier	STOVL	*Illustrious*	1 Sqdn	809
Sea Harrier	STOVL	Yeovilton	1 Sqdn	899
Canberra/Hunter	Fleet Requirements	Yeovilton	1 Sqdn	FRADO

Helicopters	*Role*	*Deployment*	*No. of sqdns or flights*	*Squadron no.*
Lynx 2	Aircrew Training	Yeovilton	1 Sqdn }	702
Lynx 2	ASW	Destroyers and Frigates	23 Flights }	
Wasp	Aircrew Training	Portland	1 Sqdn	703
Gazelle	Pilot Training	Culdrose	1 Sqdn	705
Sea King 2	Aircrew Training	Culdrose	1 Sqdn	706
Wessex 5	Aircrew Training	Yeovilton	1 Sqdn	707
Wessex 3	ASW	"County" class	2 Flights }	737
Wessex 3	Aircrew Training	Portland	1 Sqdn }	
Wessex 5	Aircrew Training	Culdrose	1 Sqdn	771
Wessex 5	Fleet Requirements	Portland	1 Sqdn	772
Sea King 2	ASW	—	1 Sqdn	814
Sea King 2	ASW	Prestwick	1 Sqdn	819
Sea King 2	ASW (see notes)	*Invincible*	1 Sqdn	820
Sea King 2	ASW	RFAs	1 Sqdn	824
Sea King 2	ASW (see notes)	*Hermes*	1 Sqdn	826
Wasp	ASW	Frigates/Survey	22 Flights	829
Wessex 5	Commando Assault	Yeovilton/*Hermes*	2 Sqdns	845, 846
Sea King 4	Commando Assault	Yeovilton	1 Flight	846
—	RNR Squadron (T)	—	—	1831
—	RNR Squadron (FL)	—	—	1832

Notes: (a) New design in progress for helicopter EH 101. This is to have an enhanced A/S capability over Sea King.
(b) Sea King 5 to join 820 and 826 squadrons in 1981-82.
(c) Total strength:

35 Sea Harriers	94 Sea Kings 2, 4 and 5
16 Jetstream T2	88 Lynx (10 on order)
4 Herons	150 Wessex 3 and 5
8 Devons	80 Wasps
	18 Gazelles

(d) RAF—4 Squadrons Maritime Patrol Nimrods (42, 120, 201 and 206)

Royal Marines

1 Brigade HQ, 3 RM Commandos, 1 Commando Regiment RA, 1 Commando Squadron RE, 1 Brigade Air Squadron RM (Light helicopters), 1 Commando Logistic Regiment, 1 Special Boat Squadron, 2 Raiding Squadrons plus 1 Commando Squadron RE (Volunteer) and 1 Raiding Squadron RMR.

Mercantile Marine

Lloyd's Register of Shipping:
3 181 vessels of 27 135 155 tons gross

DELETIONS

(Note: Disposal List following)

Submarines

1976 *Rorqual*
1977 *Andrew* (b.u.—4 May)
1980 *Grampus* (Converted as target Jan-May 1980). *Cachalot* (b.u. Blyth 4 Feb)

Carriers

1978 *Eagle* (b.u. Cairn Ryan 19 Oct)
1980 *Ark Royal* (b.u. Cairn Ryan 28 Sep)

Cruiser

1975 *Lion* (b.u. Inverkeithing 24 Apr)

Light Cruiser

1976 *Hampshire* (b.u. Briton Ferry 25 Apr 1979)

Destroyers

1974 *Agincourt* (b.u. Sunderland 27 Oct)
1975 *Corunna* (b.u. Blyth 11 Sep)
1978 *Barrosa* (b.u. Blyth 1 Dec). *Matapan* (b.u. Blyth Aug 1979)
1979 *Caprice* (b.u. Oct)
1980 *Diamond* (scrap Apr 1981)

Frigates

1974 *Tenby, Whirlwind* (target 28 Oct)
1976 *Blackwood, Puma, Llandaff* (to Bangladesh). *Volage*
1977 *Mermaid* (to Malaysia). *Scarborough* (b.u.)
1978 *Jaguar* (to Bangladesh). *Leopard, Blackpool, Undaunted* (sunk as target Nov). *Malcolm*
1979 *Whitby* (b.u. Queenborough 17 Jan). *Exmouth* (b.u. Briton Ferry 20 Feb). *Keppel* (b.u. Sittingbourne Apr)
1980 *Ulster* (b.u. Inverkeithing 29 Oct)

Depot Ship

1978 *Maidstone* to Rosyth for b.u. (May)

MCM Vessels

1974 *Woolaston*
1975 *Boulston, Maddiston* (scrapped). *Birdham* (sold 1980), *Odiham* (sold 1980)
1976 *Highburton, Woolaston, Arlingham* (sold 1978) *Fittleton* (sunk in collision Sep b.u. after salvage)
1977 *Ashton* (Aug). *Dufton* (b.u.—10 June). *Chawton* (b.u.—6 Aug), *Wiston*
1979 *Quainton* (b.u. Blyth 18 Oct)
1980 *Puttenham, Tongham* (sold 1980)

Fast Attack Craft

1976 *Dark Gladiator* (sunk as target—Portland)

LST

1980 *Messina* (b.u. Spain 1980)

Service Forces

1974 *Wave Chief, Derwentdale* (returned to owners), *Brown Ranger* (tankers)
Barmond (MSBV), *Miner III*
1975 *Dispenser,* (MSBV), *Robert Middleton* (stores carrier), *Icewhale* (trials ship),
Freshmere (water boat), *Bowstring* (armament carrier). *Ironbridge* (old), *Nordenfeld*
1976 *Tideflow* (to b.u. Bilbao—4 May). *Spalake, Spaburn, Freshpool, Freshpond*
1977 *Tidesurge* (tanker, b.u.—April). *Barfoot* (MSBV, b.u.—23 Aug)
Reliant (airstores ship, b.u.—23 Aug). *Throsk* (stores ship, b.u.—12 June)
Spa Beck, Spa Brook (water carriers)
1978 *Hebe* (sold 1979), *Empire Gull* (b.u. Spain 1980). *Orangeleaf, Retainer, Coll* (sunk as target), *Graemsay, Bern, Layburn, Kinterbury* (old)
1979 *Cherryleaf* (returned to owners). *Tidereach* (b.u. 20 Mar), *Resurgent, Laymoor* (Gibraltar), *Thomas Grant* (sold), *Britannic* (sunk as target), *Steady* (sold 1980), *Bullfinch* (b.u. Blyth 1980), *Freshspring* (sold 1980)
1980 *Lyness* (to USN as *Sirius*), *Whimbrel, Switha*

Survey Ship

1976 *Vidal* (b.u. Bruges—June)

Tugs

1975 *Diver, Driver, Eminent, Empire Ace, Empire Demon, Empire Fred, Empire Rosa, Fidget, Foremost, Freedom, Frisky, Handmaid, Impetus, Integrity, Prompt, Security, Tampeon, Trunnion, Vagrant, Weasel*
1976 *Reward* (to disposal after salvage 29 Aug)
1979 *Favourite* (b.u. Spain 1980), *Director* (b.u. Spain 1980)
1980 *Sea Giant* (b.u. Spain 1980)

DISPOSAL LIST

The following ships already deleted from the Navy List are not on the Active or Reserve list and are held in the ports shown pending disposal by sale or scrap in which event they are transferred to Deletions above.

Submarines

Finwhale, Narwhal (Plymouth)

Aircraft Carrier

Bulwark

Helicopter Cruisers

Tiger, Blake

Light Cruiser

Devonshire (Portsmouth)

Frigates

Grenville (Portsmouth)
Palliser (Portsmouth)
Rapid (Milford Haven—Target)
Chichester, Lincoln, Dundas, Tartar, Gurkha, Eskimo, Nubian, Zulu, Mohawk, Ashanti, Lynx

Minesweepers—Coastal

Repton, Shoulton, Belton (Rosyth)

Minesweepers—Inshore

Bottisham, Chelsham, Pagham, Thakeham, Bucklesham, Downham, Fritham, Fordham, Warmingham, Isis, Everingham, Haversham, Lasham

Fast Attack Craft

Brave Borderer, Dark Hero (Pembroke Dock), *Tenacity*

Depot Ships

Forth (Devonport), *Triumph* (Chatham)

Diving Support Ship

Reclaim

LSTs

Lofoten (Rosyth), *Stalker* (Rosyth), *Zeebrugge* (Plymouth), *Agheila*

Immobile Tenders

Russell F 97. Attached to *Sultan*/*Collingwood*—Portsmouth
Duncan F 80. Attached to *Caledonia*—Rosyth
Eastbourne F 73. Attached to *Caledonia*—Rosyth (approved for disposal 1978)
Hardy F 54. Stores and accommodation ship at Portsmouth
Salisbury F 32. Attached to *Raleigh*—Devonport for alongside training
Kent D 12. Fleet Training ship alongside at Portsmouth

PENNANT LIST

Note: Not displayed on Submarines or some RMAS craft.

*Disposal List

Submarines

S 01	Porpoise
S 07	Sealion
S 08	Walrus
S 09	Oberon
S 10	Odin
S 11	Orpheus
S 12	Olympus
S 13	Osiris
S 14	Onslaught
S 15	Otter
S 16	Oracle
S 17	Ocelot
S 18	Otus
S 19	Opossum
S 20	Opportune
S 21	Onyx
S 22	Resolution
S 23	Repulse
S 26	Renown
S 27	Revenge
S 46	Churchill

Submarines

S 48	Conqueror
S 50	Courageous
S 101	Dreadnought
S 102	Valiant
S 103	Warspite
S 104	Sceptre
S 105	Spartan
S 106	Splendid
S 107	Trafalgar
S 108	Sovereign
S 109	Superb
S 126	Swiftsure

Aircraft Carriers

R 05	Invincible
R 06	Illustrious
R 08	Bulwark*
R 09	Ark Royal
R 12	Hermes

Cruisers

C 20	Tiger*
C 99	Blake*

Light Cruisers and Destroyers

D 02	Devonshire*
D 12	Kent
D 16	London
D 18	Antrim
D 19	Glamorgan
D 20	Fife
D 21	Norfolk
D 23	Bristol
D 80	Sheffield
D 86	Birmingham
D 87	Newcastle
D 88	Glasgow
D 89	Exeter
D 90	Southampton
D 91	Nottingham

Light Cruisers and Destroyers

D 92	Liverpool
D 95	Manchester
D 96	Gloucester
D 97	Edinburgh
D 98	York
D 108	Cardiff
D 118	Coventry

Frigates

F 10	Aurora
F 12	Achilles
F 15	Euryalus
F 16	Diomede
F 18	Galatea
F 27	Lynx*
F 28	Cleopatra
F 32	Salisbury*
F 38	Arethusa
F 39	Naiad

Frigates

F 40	Sirius
F 42	Phoebe
F 43	Torquay
F 45	Minerva
F 47	Danae
F 52	Juno
F 54	Hardy*
F 56	Argonaut
F 57	Andromeda
F 58	Hermione
F 59	Chichester*
F 60	Jupiter
F 69	Bacchante
F 70	Apollo
F 71	Scylla
F 72	Ariadne
F 73	Eastbourne*
F 75	Charybdis
F 80	Duncan*
F 88	Broadsword
F 89	Battleaxe
F 90	Brilliant
F 91	Brazen
F 92	Boxer
F 93	Beaver
F 94	Palliser*
F 97	Russell*
F 99	Lincoln
F 101	Yarmouth
F 103	Lowestoft
F 104	Dido
F 106	Brighton
F 107	Rothesay
F 108	Londonderry
F 109	Leander
F 113	Falmouth
F 114	Ajax
F 115	Berwick
F 117	Ashanti*
F 119	Eskimo*
F 122	Gurkha*
F 124	Zulu*
F 125	Mohawk*
F 126	Plymouth
F 127	Penelope
F 129	Rhyl
F 131	Nubian*
F 133	Tartar*
F 138	Rapid*
F 169	Amazon
F 170	Antelope
F 171	Active
F 172	Ambuscade
F 173	Arrow
F 174	Alacrity
F 184	Ardent
F 185	Avenger
F 197	Grenville*

Assault Ships

L 10	Fearless
L 11	Intrepid

Logistic Landing Ships and LCTs

L 700-711	LCM 9
L 3004	Sir Bedivere
L 3005	Sir Galahad
L 3027	Sir Geraint
L 3029	Sir Lancelot
L 3036	Sir Percivale
L 3505	Sir Tristram
L 3507-8	LCM 9
L 4001	Ardennes
L 4003	Arakan
L 7037	LCM 7
L 7100	LCM 7

LCMs (RCT)

RPL 01	Avon
RPL 02	Bude
RPL 03	Clyde
RPL 04	Dart
RPL 05	Eden
RPL 06	Forth
RPL 07	Glen
RPL 08	Hamble
RPL 09	Itchen
RPL 10	Kennet
RPL 11	Loddon
RPL 12	Medway

Helicopter Support Ship

K 08	Engadine

Minelayer

N 21	Abdiel

Minesweepers/Minehunters

H 1158	Laleston
M 07	St David
M 08	Venturer
M 29	Brecon
M 30	Ledbury
M 31	Cattistock
M 32	Cottesmore
M 33	Brocklesby
M 34	Middleton
M 1103	Alfriston
M 1109	Bickington
M 1110	Bildeston
M 1113	Brereton
M 1114	Brinton
M 1115	Bronington
M 1116	Wilton
M 1124	Crichton
M 1125	Cuxton
M 1133	Bossington
M 1140	Gavinton
M 1141	Glasserton
M 1146	Hodgeston
M 1147	Hubberston
M 1151	Iveston
M 1153	Kedleston
M 1154	Kellington
M 1157	Kirkliston
M 1165	Maxton
M 1166	Nurton
M 1173	Pollington
M 1180	Shavington
M 1181	Sheraton
M 1182	Shoulton*
M 1187	Upton
M 1188	Walkerton
M 1195	Wotton
M 1200	Soberton
M 1204	Stubbington
M 1208	Lewiston
M 1216	Crofton
M 2002	Aveley
M 2621	Dittisham
M 2628	Flintham
M 2720	Waterwitch (ex-*Powderham*)
M 2726	Shipham RNXS
M 2737	Warmingham RNR
M 2780	Woodlark (ex-*Yaxham*)
M 2781	Portisham RNXS
M 2790	Thatcham RNR
M 2791	Sandringham
M 2793	Thornham

RNXS = Royal Naval Auxiliary Service

Light Forces

P 234	Hovercraft VT2
P 235	Hovercraft XW 255
P 236	Hovercraft XV 615
P 237	Hovercraft XV 617
P 238	Hovercraft XV 859
P 252	Alert
P 254	Vigilant
P 260	Kingfisher
P 261	Cygnet
P 262	Peterel
P 263	Sandpiper
P 271	Scimitar
P 274	Cutlass
P 275	Sabre
P 277	Anglesey
P 278	Alderney
P 295	Jersey
P 296	Speedy
P 297	Guernsey
P 298	Shetland
P 299	Orkney
P 300	Lindisfarne
P 1007	Beachampton
P 1055	Monkton
P 1089	Wasperton
P 1093	Wolverton
P 1096	Yarnton
P 3104	Dee (ex-*Beckford*)
P 3113	Droxford

Support Ships and Auxiliaries

A 00	Britannia
A 70	Echo
A 71	Enterprise
A 72	Egeria
A 75	Tidespring
A 76	Tidepool
A 77	Pearleaf
A 78	Plumleaf
A 79	Appleleaf
A 81	Brambleleaf
A 85	Faithful
A 88	Agile
A 89	Advice
A 90	Accord
A 93	Dexterous

Support Ships and Auxiliaries

A 99	Beaulieu
A 100	Beddgelert
A 101	Bembridge
A 102	Airedale
A 103	Bibury
A 104	Blakeney
A 105	Brodick
A 106	Alsatian
A 108	Triumph*
A 111	Cyclone
A 112	Felicity
A 113	Alice
A 114	Magnet
A 115	Lodestone
A 116	Agatha
A 117	Audrey
A 121	Agnes
A 122	Olwen
A 123	Olna
A 124	Olmeda
A 126	Cairn
A 127	Torrent
A 128	Torrid
A 129	Dalmatian
A 133	Hecla
A 134	Rame Head
A 137	Hecate
A 138	Herald
A 140	Tornado
A 141	Torch
A 142	Tormentor
A 143	Toreador
A 144	Hydra
A 145	Daisy
A 146	Waterman
A 147	Frances
A 148	Fiona
A 149	Florence
A 150	Genevieve
A 152	Georgina
A 155	Deerhound
A 156	Daphne
A 157	Loyal Helper
A 158	Supporter
A 159	Loyal Watcher
A 160	Loyal Volunteer
A 161	Loyal Mediator
A 162	Elkhound
A 164	Goosander
A 165	Pochard
A 166	Kathleen
A 168	Labrador
A 170	Kitty
A 171	Endurance
A 172	Lesley
A 173	Dorothy
A 174	Lilah
A 175	Mary
A 177	Edith
A 178	Husky
A 180	Mastiff
A 181	Irene
A 182	Saluki
A 183	Isabel
A 188	Pointer
A 189	Setter
A 190	Joan
A 191	Berry Head
A 193	Joyce
A 196	Gwendoline
A 197	Sealyham
A 198	Helen
A 199	Myrtle
A 201	Spaniel
A 202	Nancy
A 205	Norah
A 207	Llandovery
A 208	Lamlash
A 210	Charlotte
A 211	Lechlade
A 213	Endeavour
A 216	Bee
A 217	Christine
A 218	Clare
A 220	Loyal Moderator
A 224	Adept
A 225	Bustler
A 226	Capable
A 227	Careful
A 229	Cricket
A 230	Cockchafer
A 231	Reclaim*
A 232	Kingarth
A 236	Wakeful
A 239	Gnat
A 250	Sheepdog
A 252	Doris
A 253	Ladybird
A 259	St. Margarets
A 261	Eddyfirth
A 263	Cicala
A 268	Green Rover
A 269	Grey Rover
A 270	Blue Rover

Support Ships and Auxiliaries

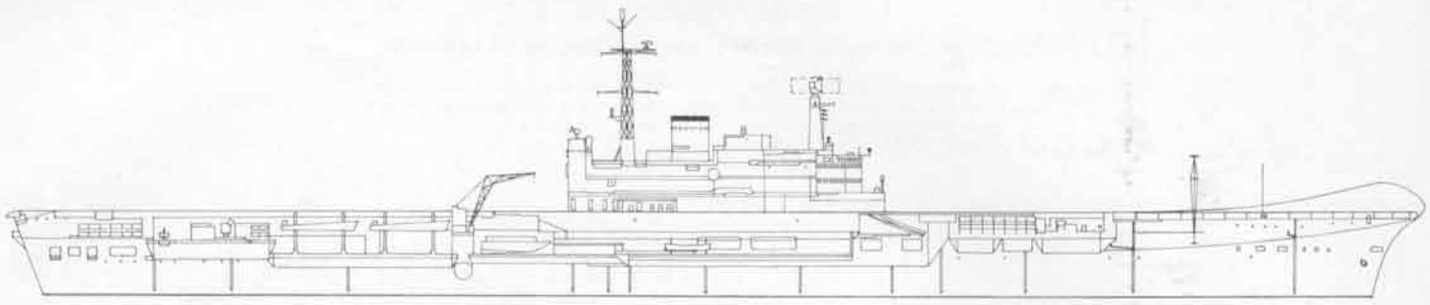
A 271	Gold Rover
A 272	Scarab
A 273	Black Rover
A 274	Ettrick
A 277	Elsing
A 281	Kinbrace
A 285	Auricula
A 289	Confiance
A 290	Confident
A 308	Ilchester
A 309	Instow
A 310	Ironbridge
A 311	Invergordon
A 317	Bulldog
A 318	Ixworth
A 319	Beagle
A 320	Fox
A 322	Betty
A 323	Bridget
A 324	Barbara
A 325	Brenda
A 326	Foxhound
A 327	Basset
A 328	Collie
A 330	Corgi
A 332	Caldy
A 335	Fawn
A 336	Lundy
A 341	Fotherby
A 344	Stromness
A 345	Tarbatness
A 348	Felsted
A 350	Cartmel
A 351	Cawsand
A 353	Elkstone
A 354	Froxfield
A 355	Epworth
A 357	Datchet
A 361	Roysterer
A 362	Dolwen
A 363	Denmead
A 364	Whitehead
A 365	Fulbeck
A 366	Robust
A 367	Newton
A 378	Kinterbury
A 379	Throsk
A 381	Cricklade
A 383	Appleby
A 385	Fort Grange
A 386	Fort Austin
A 389	Clovelly
A 391	Criccieth
A 392	Glencoe
A 393	Dunster
A 394	Fintry
A 402	Grasmere
A 404	Bacchus
A 480	Resource
A 482	Kinloss
A 486	Regent
A 488	Cromarty
A 490	Dornoch
A 502	Rollicker
A 507	Uplifter
A 1766	Headcorn
A 1767	Hever
A 1768	Harlech
A 1769	Hambledon
A 1770	Loyal Chancellor
A 1771	Loyal Proctor
A 1772	Holmwood
A 1773	Horning

Auxiliaries

Y 10	Aberdovey
Y 11	Abinger
Y 12	Alness
Y 13	Alnmouth
Y 16	Ashcott
Y 17	Waterfall
Y 18	Watershed
Y 19	Waterspout
Y 20	Waterside
Y 21	Oilpress
Y 22	Oilstone
Y 23	Oilwell
Y 24	Oilfield
Y 25	Oilbird
Y 26	Oilman
Y 30	Watercourse
Y 31	Waterfowl

Boom Defence Vessels

P 190	Laymoor*
P 192	Mandarin
P 193	Pintail
P 194	Garganey
P 195	Goldeneye



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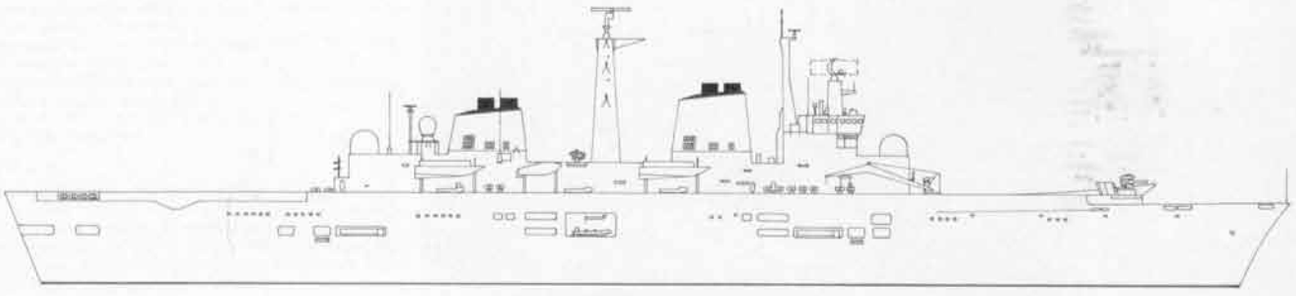

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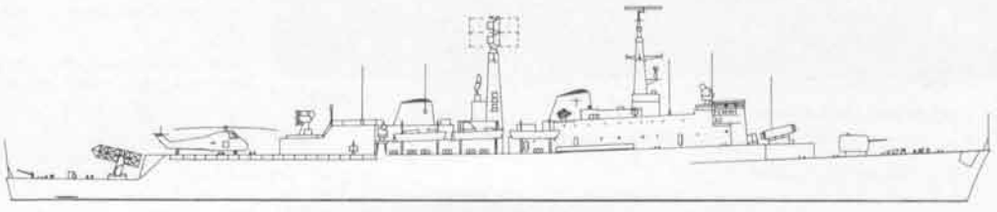

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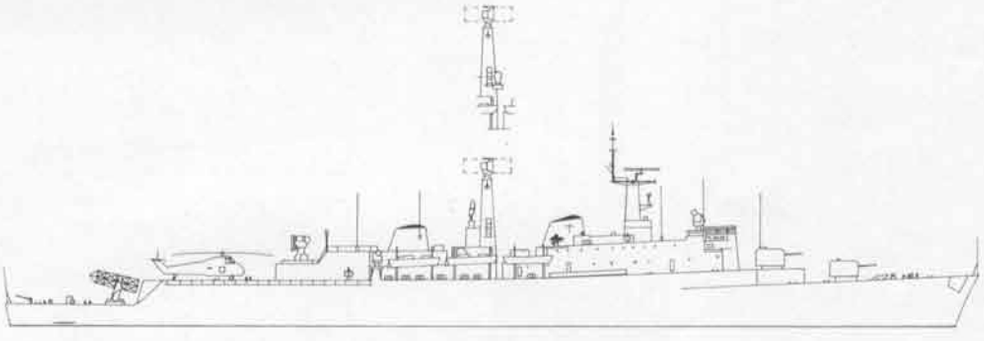
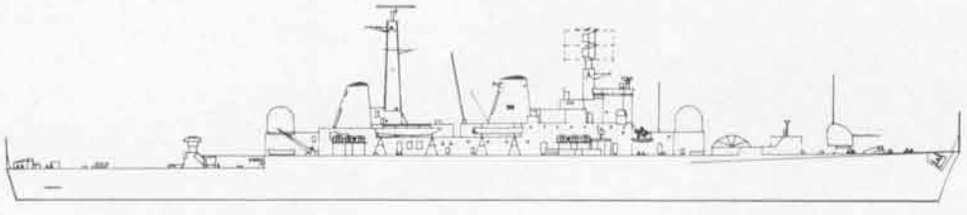


KENT (*London* mainmast as insert)



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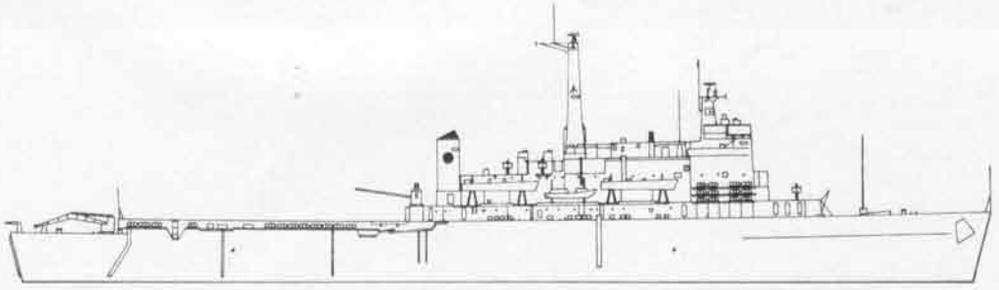
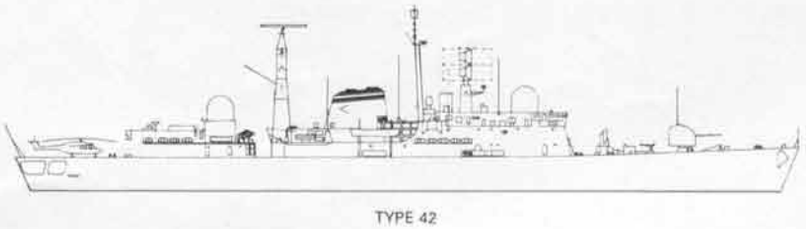


"INTREPID" Class



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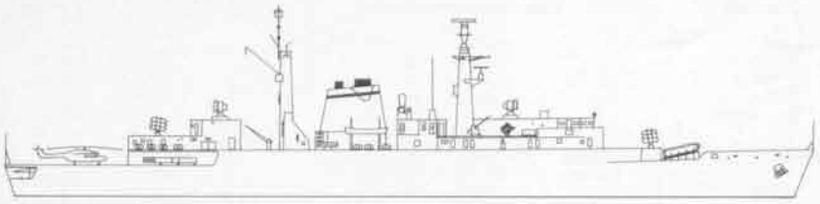
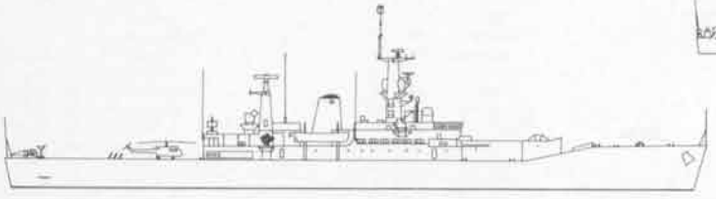
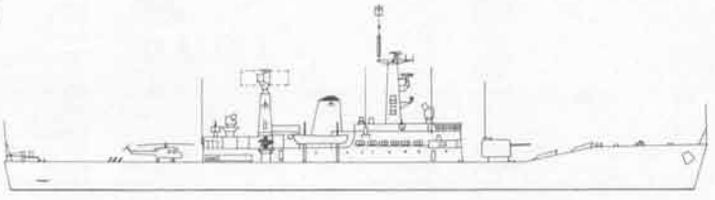


"BROADSWORD" Class (Type 22)

"AMAZON" Class (Type 21)

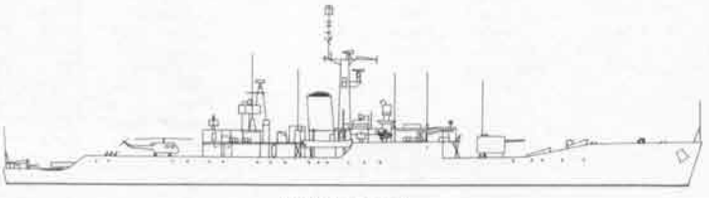


"LEANDER" Class (Ikara)

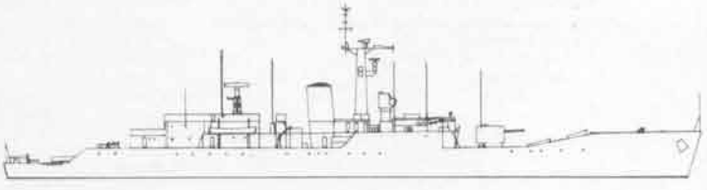


"LEANDER" Class (4·5")

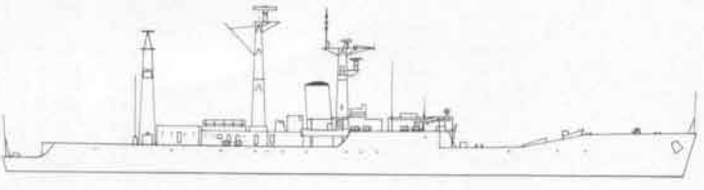
"LEANDER" Class (Exocet)



"ROTHESAY" Class



TORQUAY

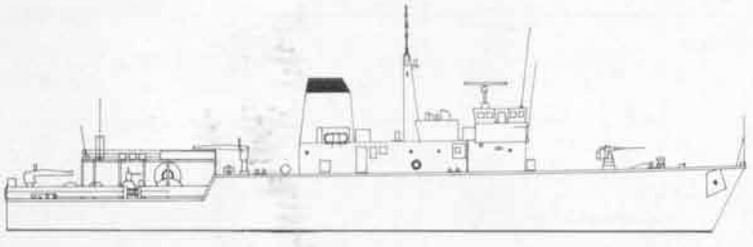


LONDONDERRY

ENDURANCE

"SALISBURY" Class (Type 61)

(Scale 1 : 1 200)



"HUNT" Class

SPEEDY

JERSEY

(Scale 1 : 600)

All drawings by Ian Sturton

SUBMARINES

Nuclear Powered Ballistic Missile Submarines (SSBN)

Note: It was announced on 15 July 1980 that the replacements for the "Resolution" class would be four or five submarines armed with Trident missiles (eight MIRV) heads to commission in early 1990s. Subsequently stated that only four such submarines would be built.

4 "RESOLUTION" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
RESOLUTION	S 22	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	26 Feb 1964	15 Sep 1966	2 Oct 1967
REPULSE	S 23	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	12 Mar 1965	4 Nov 1967	28 Sep 1968
RENOWN	S 26	Cammell Laird & Co Ltd, Birkenhead	25 June 1964	25 Feb 1967	15 Nov 1968
REVENGE*	S 27	Cammell Laird & Co Ltd, Birkenhead	19 May 1965	15 Mar 1968	4 Dec 1969

* Refit

Displacement, tons: 7 500 surfaced; 8 400 dived
Dimensions, feet (metres): 425 × 33 × 30 *(129·5 × 10·1 × 9·1)*
Missiles: SLBMs—16 Polaris A3
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Nuclear reactors: 1 pressurised water-cooled
Main machinery: Geared steam turbines; 1 shaft; 15 000 shp
Speed, knots: 20 surfaced; 25 dived
Complement: 143 (13 officers, 130 ratings); 2 crews (see *Personnel*)

In February 1963 it was officially stated that it was intended to order four or five 7 000 ton nuclear powered submarines, each to carry 16 Polaris missiles, and it was planned that the first would be on patrol in 1968. Their hulls and machinery would be of British design. As well as building two submarines Vickers (Shipbuilding) would give lead yard service to the builder of the other two. Four Polaris submarines were in fact ordered in May 1963. The plan to build a fifth Polaris submarine was cancelled on 15 February 1965. Britain's first SSBN, *Resolution*, put to sea on 22 June 1967 and completed six weeks trial in the Firth of Clyde and Atlantic on 17 August 1967.

Cost: *Resolution*, £40·24 million; *Renown*, £39·95 million; *Repulse*, £37·5 million; *Revenge*, £38·6 million; completed ships excluding missiles.

Engineering: Emergency drive using diesel generator, batteries and electric motor. Main turbo alternator, 1 700 kW.

External gear: Hoist gear by MacTaggart, Scott & Co Ltd for: attack and search periscopes, radar and EW masts, snort induction and exhaust, ALP aerial.

RESOLUTION *1978, MOD(N)*

Missiles: Polaris A3 carry three MIRV heads each of 60 KT. New Chevaline warheads fitted in 1980.

Personnel: Each submarine, which has accommodation for 19 officers and 135 ratings, is manned on a two-crew basis, in order to get maximum operational time at sea.

Radar: Search: I-band.

Sonar: Types 2001 and 2007.

REVENGE *1978, MOD(N)*

REPULSE *1978, MOD(N)*

Fleet Submarines

Notes: (a) It is planned to provide Sub-Harpoon in all Fleet Submarines from the early 1980s.
(b) Negotiations for supply of Sub-Harpoon in early 1980s completed 1977. Successful trials carried out by *Churchill* 1979-80.
(c) As pennant numbers are never displayed and rarely used class lists are in order of completion.

0 + 3 NEW CONSTRUCTION "TRAFALGAR" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TRAFALGAR	S 107	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	1978	late 1981	—
TURBULENT	—	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	1979	—	—
—	—	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	1981	—	—

The first of an improved class of Fleet Submarines was ordered in September 1977. Second ordered 28 July 1978 with a third ordered 5 July 1979. A fourth was to have been ordered in 1980, but this was delayed. Improvements include equipment, endurance and speed. Estimated cost of fourth submarine £175 million including equipment and weapon system.

6 "SWIFTSURE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SWIFTSURE*	S 126	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	6 June 1969	7 Sep 1971	17 Apr 1973
SOVEREIGN	S 108	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	18 Sep 1970	17 Feb 1973	11 July 1974
SUPERB	S 109	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	16 Mar 1972	30 Nov 1974	13 Nov 1976
SCEPTRE	S 104	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	19 Feb 1974	20 Nov 1976	14 Feb 1978
SPARTAN	S 105	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	26 Apr 1976	7 Apr 1978	22 Sep 1979
SPLENDID	S 106	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	23 Nov 1977	5 Oct 1979	21 Mar 1981

*Refit

Displacement, tons: 4 000 light; 4 200 standard; 4 500 dived
Dimensions, feet (metres): 272 × 32·3 × 27 *(82·9 × 9·8 × 8·2)*
Torpedo tubes: 5—21 in *(533 mm)* (20 reloads)
Nuclear reactor: 1 pressurised water-cooled
Main machinery: General Electric geared steam turbines; 15 000 shp; 1 Paxman auxiliary diesel; 4 000 hp; 1 shaft
Speed, knots: 30 dived
Complement: 97 (12 officers, 85 men)

Compared with the "Valiant" class submarines these are slightly shorter with a fuller form, with the fore-planes set further forward, with one less torpedo tube and with a deeper diving depth.
Sovereign visited the North Pole 1976.

Costs: Building—*Swiftsure* £37·1 million, *Superb* £41·3 million. *Sceptre* £58·9 million. *Spartan* £68·9 million. Running cost £3·8 million per submarine per year (at 1976 prices).

Design: The pressure hull in the "Swiftsure" class maintains its diameter for much greater length than previously.

Electrical: 112 cell emergency battery with diesel generator and electric motor for emergency drive.

Engineering: Whilst the basic reactor design remains similar to previous types core-life has probably increased.

SUPERB

10/1980, L. and L. van Ginderen

External gear: Control gear by MacTaggart, Scott & Co Ltd for: attack and search periscopes, snort induction and exhaust, radar and EW masts, ALK buoy. The forward hydroplanes house within the casing, the only activated housing hydroplanes in any submarine design.

Orders: *Swiftsure,* 3 Nov 1967; *Sovereign,* 16 May 1969; *Superb,* 20 May 1970; *Sceptre,* 1 Nov 1971; *Spartan,* 7 Feb 1973; *Splendid,* 26 May 1976.

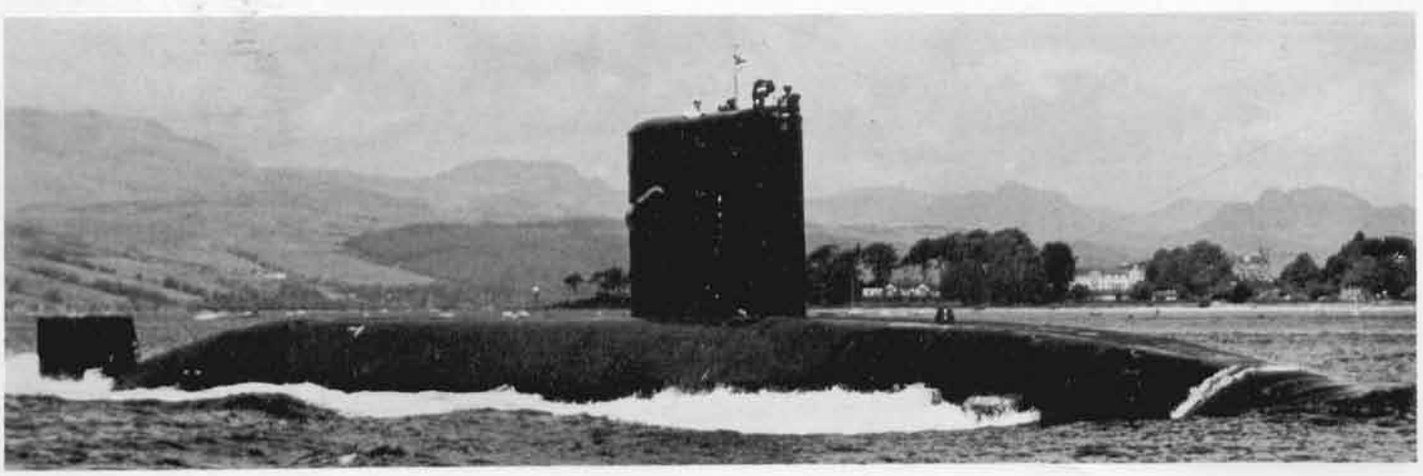
Radar: Search: Type 1006.

Sonar: Types 2001, 2007, 197 and 183.

Torpedoes: Individual reloading of torpedoes in 15 seconds. Carry Tigerfish (Mk 24 (Modified)) with anti-ship capability.

SCEPTRE

10/1978, Michael D. J. Lennon



SUPERB

6/1978, MOD(N) (LA Phot. R. C. H. Hodgson)

2 "VALIANT" and 3 "CHURCHILL" CLASSES

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
VALIANT	S 102	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	22 Jan 1962	3 Dec 1963	18 July 1966
WARSPITE*	S 103	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	10 Dec 1963	25 Sep 1965	18 Apr 1967
CHURCHILL*	S 46	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	30 June 1967	20 Dec 1968	15 July 1970
CONQUEROR	S 48	Cammell Laird & Co Ltd, Birkenhead	5 Dec 1967	28 Aug 1969	9 Nov 1971
COURAGEOUS	S 50	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	15 May 1968	7 Mar 1970	16 Oct 1971

* Refit

Displacement, tons: 4 000 light; 4 400 standard; 4 900 dived
Dimensions, feet (metres): 285 × 33·2 × 27 *(86·9 × 10·1 × 8·2)*
Torpedo tubes: 6—21 in *(533 mm)* (26 reloads)
Nuclear reactor: 1 pressurised water-cooled
Main machinery: English Electric geared steam turbines; 1 shaft; 15 000 shp
Speed, knots: 28 dived
Complement: 103 (13 officers, 90 men)

It was announced on 31 August 1960 that the contract for a second nuclear powered submarine *(Valiant)* had been awarded to Vickers Ltd, the principal sub-contractors being Vickers-Armstrong (Engineers) Ltd, for the machinery and its installation, and Rolls-Royce and Associates for the nuclear steam raising plant. The class, of which she is the first, is broadly of the same design as that of *Dreadnought*, but slightly larger. She was originally scheduled to be completed in September 1965, but work was held up by the Polaris programme. Diving depth 300 metres.

Cost: Varied from £24 million *(Warspite)* to £30 million *(Conqueror)*. *Valiant* completed two year refit in March 1980 at cost of £40 million.

Electrical: 112 cell emergency battery with diesel generator and electric motor for emergency drive.

Endurance: On 25 April 1967 *Valiant* completed the 12 000 mile homeward voyage from Singapore, the record submerged passage by a British submarine, after 28 days non-stop.

Engineering: *Valiant*'s reactor core was made in the UK, with machinery of British design and manufacture similar to the shore prototype installed in the Admiralty Reactor Test Establishment at Dounreay. The main steam turbines and condensers were designed and manufactured by the English Electric Company, Rugby, and the electrical propulsion machinery and control gear by Laurence, Scott & Electromotors Ltd.

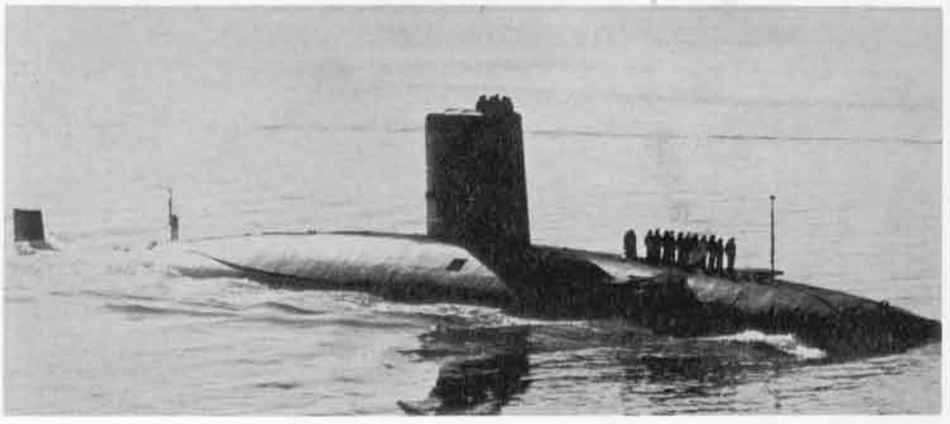
External gear: Control gear by MacTaggart, Scott & Co Ltd for: Attack and search periscopes, radar, SHFD/F and communication masts, snort induction and exhaust masts and ALK buoy.

Orders: *Valiant*, 31 Aug 1960—*Warspite*, 12 Dec 1962—*Churchill*, 21 Oct 1965—*Conqueror*, 9 Aug 1966—*Courageous*, 1 Mar 1967.

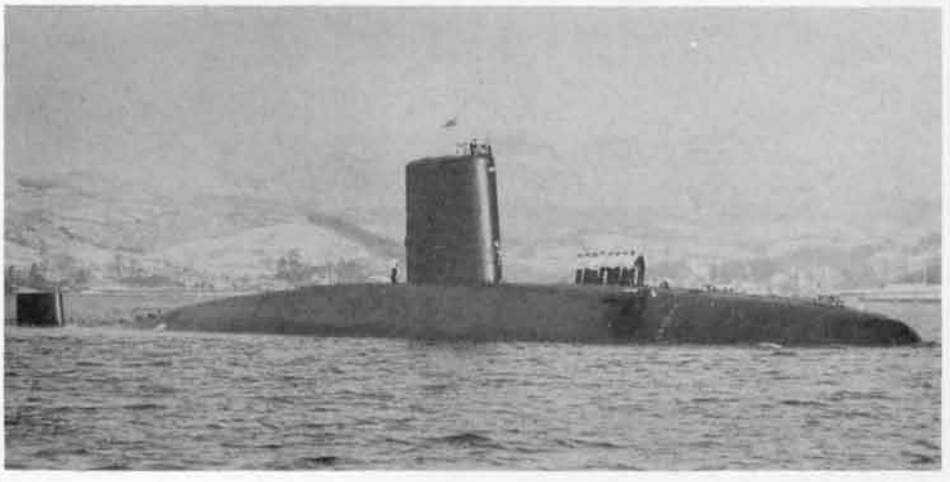
Radar: Search: Type 1006.

Sonar: Types 2001, 2007, 197 and 183.

Torpedoes: Individual reloading in 15 seconds.



VALIANT *10/1980, L. and L. van Ginderen*



CHURCHILL *1978, MOD(N)*

1 "DREADNOUGHT" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
DREADNOUGHT*	S 101	Vickers-Armstrong, Barrow-in-Furness	12 June 1959	21 Oct 1960	17 Apr 1963

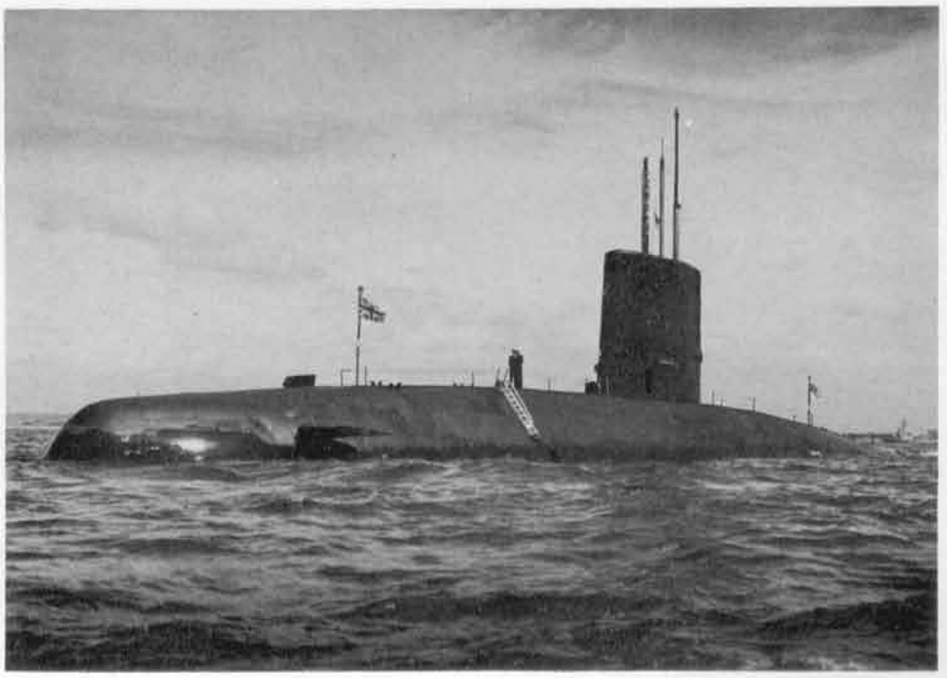
* Refit

Displacement, tons: 3 000 standard; 3 500 surfaced; 4 000 dived
Dimensions, feet (metres): 265·8 × 32·2 × 26 *(81 × 9·8 × 7·9)*
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Nuclear reactor: 1 S5W pressurised water-cooled
Main machinery: Geared steam turbines; 15 000 shp; 1 shaft
Speed, knots: 28 dived
Complement: 88 (11 officers, 77 men)

As originally planned *Dreadnought* was to have been fitted with a British designed and built nuclear reactor, but in 1958 an agreement was concluded with the US Government for the purchase of a complete set of propulsion machinery of the type fitted in USS *Skipjack*. This agreement enabled the submarine to be launched far earlier. The supply of this machinery was made under a contract between the Westinghouse Electric Corporation and Rolls-Royce. The latter were also supplied with design and manufacturing details of the reactor and with safety information and set up a factory in this country to manufacture similar cores. *Dreadnought* has a hull of British design both as regards structural strength and hydrodynamic features, although the latter are based on the pioneering work of the US Navy in *Skipjack* and *Albacore*. From about amidships aft, the hull lines closely resemble *Skipjack* to accommodate the propulsion machinery. The forward end is wholly British in concept. In the Control Room and Attack Centre the instruments are fitted into consoles.
The improved water distilling plant for the first time provides unlimited fresh water for shower baths and for washing machines in the fully equipped laundry.
She is fitted with an inertial navigation system and with means of measuring her depth below ice and was the first British submarine to surface at the North Pole, in 1970.

Radar: Search: I-band.

Sonar: Types 2001, 2007.



DREADNOUGHT *6/1977, Wright and Logan*

Patrol Submarines

NEW CONSTRUCTION

It is now policy to build a further class of patrol (non-nuclear) submarines. It is too early to suggest any parameters although it is to be hoped that modern technology will keep their displacement around 2 000 tons which is proving a practicable size.

13 "OBERON" and 3 "PORPOISE" CLASSES

"OBERON" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
OBERON*	S 09	HM Dockyard, Chatham	28 Nov 1957	18 July 1959	24 Feb 1961
ODIN	S 10	Cammell Laird & Co Ltd, Birkenhead	27 Apr 1959	4 Nov 1960	3 May 1962
ORPHEUS*	S 11	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	16 Apr 1959	17 Nov 1959	25 Nov 1960
OLYMPUS	S 12	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	4 Mar 1960	14 June 1961	7 July 1962
OSIRIS	S 13	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	26 Jan 1962	29 Nov 1962	11 Jan 1964
ONSLAUGHT	S 14	HM Dockyard, Chatham	8 Apr 1959	24 Sep 1960	14 Aug 1962
OTTER	S 15	Scotts (Shipbuilding) Co Ltd, Greenock	14 Jan 1960	15 May 1961	20 Aug 1962
ORACLE	S 16	Cammell Laird & Co Ltd, Birkenhead	26 Apr 1960	26 Sep 1961	14 Feb 1963
OCELOT	S 17	HM Dockyard, Chatham	17 Nov 1960	5 May 1962	31 Jan 1964
OTUS	S 18	Scotts (Shipbuilding) Co Ltd, Greenock	31 May 1961	17 Oct 1962	5 Oct 1963
OPOSSUM*	S 19	Cammell Laird & Co Ltd, Birkenhead	21 Dec 1961	23 May 1963	5 June 1964
OPPORTUNE	S 20	Scotts (Shipbuilding) Co Ltd, Greenock	26 Oct 1962	14 Feb 1964	29 Dec 1964
ONYX	S 21	Cammell Laird & Co Ltd, Birkenhead	16 Nov 1964	18 Aug 1966	20 Nov 1967

* Refit

"PORPOISE" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PORPOISE	S 01	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	15 June 1954	25 Apr 1956	17 Apr 1958
SEALION*	S 07	Cammell Laird & Co Ltd, Birkenhead	5 June 1958	31 Dec 1959	25 July 1961
WALRUS*	S 08	Scotts (Shipbuilding) Co Ltd, Greenock	12 Feb 1958	22 Sep 1959	10 Feb 1961

* Refit

Displacement, tons: 1 610 standard; 2 030 surfaced; 2 410 dived
Dimensions, feet (metres): 295·2 × 26·5 × 18 *(90 × 8·1 × 5·5)*
Torpedo tubes: 8—21 in *(533 mm)* (6 bow, 2 stern A/S); 24 torpedoes carried
Main machinery: 2 Admiralty Standard Range 1, 16 VMS diesels; 3 680 bhp; 2 electric motors; 6 000 shp; 2 shafts
Speed, knots: 12 surfaced; 17 dived
Range, miles: 9 000 surfaced
Complement: 69 (7 officers, 62 men) in "Oberon" class
71 (6 officers, 65 men) in "Porpoise" class

Cost: Running cost, at 1976 prices, £1·1 million per boat per year. Building cost: *Oberon* £2·43 million, *Onyx* £3·6 million.

Construction: For the first time in British submarines plastic was used in the superstructure construction of the "Oberon" class. Before and abaft the bridge the superstructure is mainly of glass fibre laminate in most units of this class. The superstructure of *Orpheus* is of light alloy aluminium.

Diving depth: 800-900 ft.

Engineering: 3-bladed, 7 ft diameter propellers; 400 rpm.

External gear: Control gear by MacTaggart, Scott and Co Ltd for: Search and attack periscopes, radar, communications and EW masts, snort induction and exhaust masts.

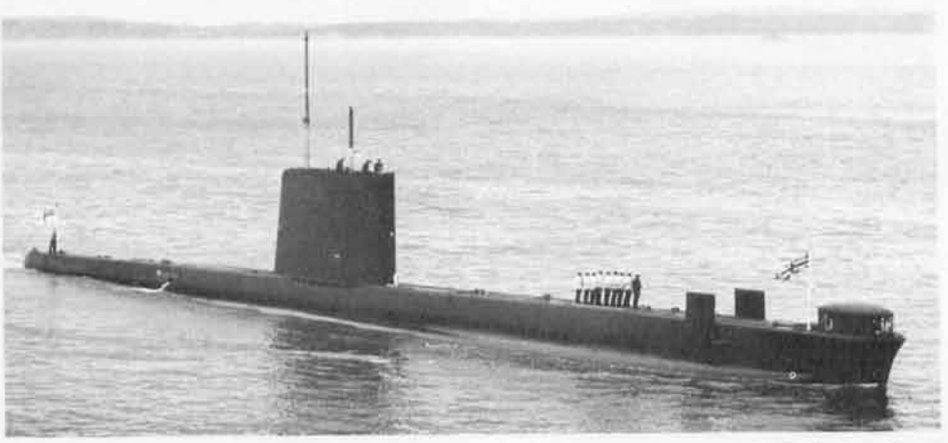
Gunnery: "O" class submarines serving in the Far East carried a 20 mm Oerlikon gun during Indonesian confrontation.

Modification: *Oberon* has been modified with deeper casing to house equipment for the initial training of personnel for nuclear powered submarines. Others of this class are currently undergoing modification.

Radar: Search: Type 1002.

Sonar: Types 187 and 2007.

Torpedo tubes: The two stern tubes were designed for short A/S torpedoes.

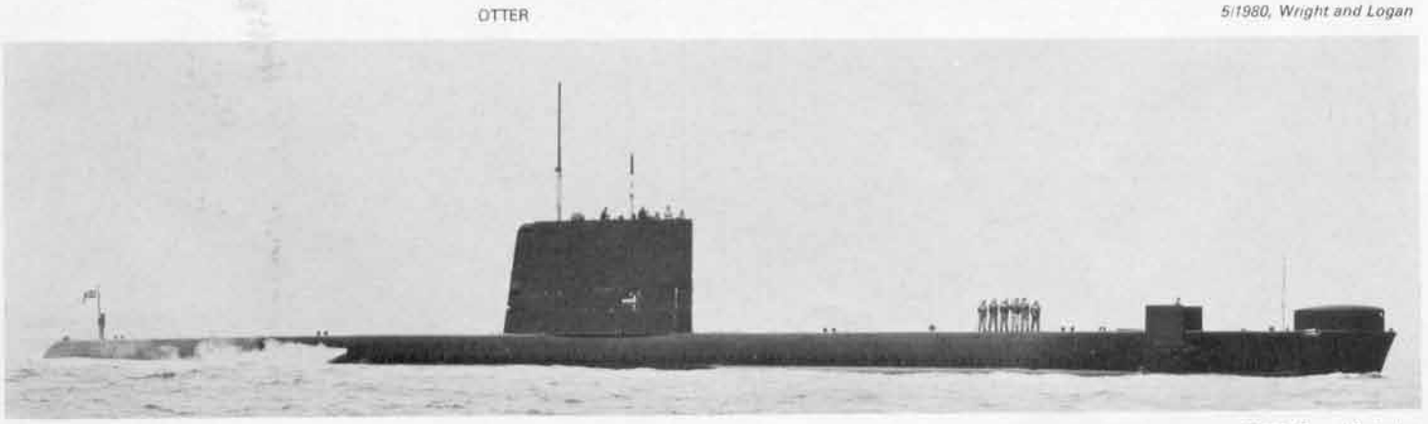


OTUS

6/1980, Wright and Logan

OTTER

5/1980, Wright and Logan



OPOSSUM

7/1979, C. and S. Taylor

AIRCRAFT CARRIERS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
HERMES*	R 12	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	21 June 1944	16 Feb 1953	18 Nov 1959

* Refit

Displacement, tons: 23 900 standard; 28 700 full load
Dimensions, feet (metres): 685 wl; 744·3 oa × 90 × 28·5 *(208·8; 226·9 × 27·4 × 8·7)*
Width, feet (metres): 160 oa *(48·8)*
Aircraft: Sea Harriers and Sea King helicopters
Armour: Reinforced flight deck (0·75 in); 1—2 in over magazines and machinery spaces
Missiles: 2 quad Seacat launchers either side abaft the after lift
Main engines: Parsons geared turbines; 2 shafts; 76 000 shp
Boilers: 4 Admiralty 3-drum type
Speed, knots: 28
Oil fuel, tons: 4 200 furnace; 320 diesel
Complement: 1 350 (143 officers, 1 207 ratings). In emergency a Commando can be embarked

Originally name ship of a class including *Albion, Bulwark* and *Centaur,* but design was modified to a more advanced type, incorporating new equipment and improved arrangements, including five post-war developments— angled deck, steam catapult, landing sight, 3D radar, and deck edge-lift. Air-conditioned. Embarked air squadrons and joined the Fleet summer 1960. Long refit 1964 to 1966, costing £10 million. A further refit was begun early 1980.

Aircraft: From 1980: five Sea Harriers and nine Sea Kings. The armament for the Sea Harriers will be the P3T ASM and Sidewinder AIM9L AAM both controlled by Blue Fox radar. By 1980 all Sea Kings were modified to the standard of the Mk 2 helicopters now in production. They all have improved radar and communications, an acoustic processor and sono-buoys to supplement the dunking sonar. Trials of Madge control system for Sea Harriers carried out successfully in 1979.

Conversion: *Hermes* was taken in hand for conversion to a Commando Carrier on 1 March 1971, commissioning for this role on 17 August 1973. Fixed wing facilities such as catapults and arrester gear were removed. The whole conversion cost over £25 million.
In 1976, as a result of the Defence Review and pressure from other NATO countries, *Hermes'* role was altered to that of A/S carrier with the retention of a capability for commando support. As a result she underwent yet another conversion at Devonport which was completed January 1977. How long she continues in this role depends on how much extra delay is experienced on the "Invincible" class but it seems likely that she will continue to run until at least 1984-85.

Electrical: Five turbo and four diesel alternators = 9 000 kW.

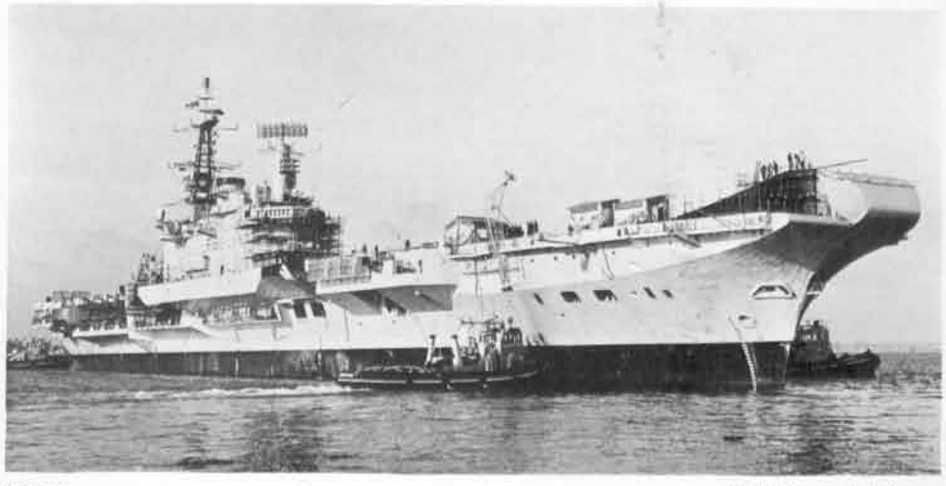
Engineering: 15·5 ft diameter propellers; 230 rpm.

Flight deck: Angled 6·5 degree off centre line of ship, the biggest angle that could be contrived in an aircraft carrier of this size. Strengthened to take Harrier aircraft. During 1980 refit fitted with 7·5 degree Ski-jump.

Radar: Surveillance: One Type 965 with single AKE-1 array.
Search: One Type 993.
Navigation: One Type 1006.
Fire control: Two GWS 22.
Tacan beacon.

Sonar: Type 184.

Turning circle: 800 yards.



HERMES *1/1981, Michael D. J. Lennon*

HERMES *5/1979, John G. Callis*

HERMES *1/1981, Michael D. J. Lennon*

1 + 2 LIGHT AIRCRAFT CARRIERS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
INVINCIBLE	R 05	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	20 July 1973	3 May 1977	11 June 1980
ILLUSTRIOUS	R 06	Swan Hunter Ltd, Wallsend	7 Oct 1976	1 Dec 1978	early 1982
ARK ROYAL	R 09	Swan Hunter Ltd, Wallsend	14 Dec 1978	mid-1981	1985

Displacement, tons: 16 000 standard; 19 500 full load
Dimensions, feet (metres): 632 wl; 677 oa × 90 × 24 *(192·8; 206·6 × 27·5 × 7·3)*
Width, feet (metres): 105 oa *(31·9)*
Flight deck length, feet (metres): 550 *(167·8)*
Aircraft: Total of 14: 9 Sea King helicopters and 5 Sea Harriers
Missiles: SAM; Twin Sea Dart (see notes)
Main engines: 4 Olympus TM3B gas turbines; 112 000 shp; 2 shafts (reversible gear box)
Speed, knots: 28
Range, miles: 5 000 at 18 knots
Complement: 1 000 (131 officers, 265 senior ratings, 604 junior ratings) (excluding aircrew)

The history of this class is a long and complex one starting in 1962. The first of class, the result of many compromises, was ordered from Vickers on 17 April 1973. At that time completion might have been expected in 1977-78 but changes in design and labour problems delayed this by two years. The results of this have been the running-on of *Hermes* and the recommissioning of *Bulwark* as well as *Blake*'s continuation in service to provide the necessary aircraft platforms at sea. The order for the second ship, *Illustrious*, was placed on 14 May 1976, whilst the third, *Ark Royal*, was placed in December 1978. *Invincible* sea trials started May 1979. *Illustrious* is to carry out sea trials in late 1981.
The primary task of this class, apart from providing a command centre for maritime air forces, is the operation of both helicopters and STOVL aircraft. Provision has been made for sufficiently large lifts and hangars to accommodate the next generation of both these aircraft.
The design allows for an open foc'sle head and a slightly angled deck which will allow the Sea Dart launcher to be set almost amidships.

Aircraft: A squadron of Sea Harriers has been embarked in *Invincible* and subsequently all such squadrons will be deployed in ships of this class. (See *Aircraft* note under *Hermes* for further details.)

Cost: Although originally estimated in early 1970s at approximately £60 million the final estimated cost of *Invincible* at March 1980 prices was £184·5 million.

Design: In 1976-77 an amendment was incorporated to allow for the transport and landing of a Commando.

Electrical: Eight diesel generators = 14 000 kW.

Flight deck: Various angles of lift have been tested for the forward end of the flight-deck. (Ski-jump) to allow V/STOL aircraft of greater all-up weight to operate more efficiently. *Invincible* and *Illustrious* have been fitted with a 7 degree Ski-jump and the *Ark Royal* is to have 15 degree Ski-jump.

Future: It now appears to be the intention to retain three carriers in commission which will normally allow for at least one being available at all times.

Missiles: GWS 30 for Sea Dart. This also has a reasonable anti-ship capability.

Radar: Surveillance: One Type 1022.
Search: One Type 992 R.
Fire control: Two Type 909 for Sea Dart.
Navigation: Two Type 1006.

Sonar: Type 2016.

INVINCIBLE *3/1980, Michael D. J. Lennon*

INVINCIBLE *5/1980, Michael D. J. Lennon*

INVINCIBLE *3/1980, Michael D. J. Lennon*

LIGHT CRUISERS

1 TYPE 82

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BRISTOL	D 23	Swan Hunter Ltd	15 Nov 1967	30 June 1969	31 Mar 1973

Displacement, tons: 6 100 standard; 7 100 full load
Dimensions, feet (metres): 490 wl; 507 oa × 55 × 16·8 (23 sonar dome)
(149·3; 154·5 × 16·8 × 5·2 (7))
Aircraft: Landing platform for 1 Wasp helicopter
Missiles: SAM; Sea Dart (twin launcher)
A/S weapons: 1 Ikara single launcher fwd
Guns: 1—4·5 in *(115 mm)*/55 (Mk 8); 2—20 mm
Main engines: COSAG; 2 Standard Range geared steam turbines, 30 000 shp; 2 Bristol-Siddeley Marine Olympus TMIA gas turbines, 30 000 shp; 2 shafts
Boilers: 2
Speed, knots: 28
Fuel, tons: 900
Range, miles: 5 000 at 18 knots
Complement: 407 (29 officers, 378 ratings)

Designed around Sea Dart GWS 30 weapons system. Fully stabilised to present a steady weapon platform. The machinery is remotely-controlled from a ship control centre. Fitted with Action Data Automation Weapon System. Started trials 10 April 1972. Remainder of class cancelled owing to high cost and cancellation of aircraft-carrier building programme for which they were intended as escorts. Officially listed as "destroyer" which is in some measure borne out by her limited fire-power, lack of embarked helicopter and limited ESM. Fitted with flagship facilities in 1979-80 refit.

Appearance: Three funnels, one amidships and two aft abreast the mainmast.

A/S weapons: Ikara is GWS 40.

Communications: By GEC-Marconi including SCOT satellite system compatible with both SKYNET and the US Defence satellites.

Corvus: Two mountings.

Cost: £22·5 million (£27 million overall). GEC-Marconi equipment for radar, weapons and communications cost over £3 million.

Engineering: Early version of Olympus gas turbine rated at 15 000 shp. Geared to shafts at 230 rpm.

Missiles: The Sea Dart ship missile system has a reasonable anti-ship capability. There are 40 missiles carried.

Radar: Surveillance: One Type 965 with double AKE array and IFF.
Search: One Type 992Q.
Fire control: Two Type 909 (Sea Dart).
Navigation: One Type 1006.

Sonar: Types 162, 170, 182, 184, 185, 189.

BRISTOL *6/1979, Wright and Logan*

BRISTOL *3/1981, Michael D. J. Lennon*

5 "COUNTY" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
LONDON	D 16	Swan Hunter & Wigham Richardson, Wallsend	26 Feb 1960	7 Dec 1961	4 Nov 1963
ANTRIM	D 18	Fairfield S.B. & Eng Co Ltd, Govan	20 Jan 1966	19 Oct 1967	14 July 1970
GLAMORGAN	D 19	Vickers (Shipbuilding) Ltd, Newcastle-upon-Tyne	13 Sep 1962	9 July 1964	11 Oct 1966
FIFE*	D 20	Fairfield S.B. & Eng Co Ltd, Govan	1 June 1962	9 July 1964	21 June 1966
NORFOLK	D 21	Swan Hunter, Wallsend	15 Mar 1966	16 Nov 1967	7 Mar 1970

* Refit

Displacement, tons: 5 440 standard; 6 200 full load
Dimensions, feet (metres): 505 wl; 520·5 oa × 54 × 20·5 (screws)
(153·9; 158·7 × 16·5 × 6·3)
Aircraft: 1 Wessex helicopter
Missiles: SSM: 4 Exocet (single cells) (except *London*) (see *Missiles* note);
SAM: Seaslug (twin launcher aft) (36 missiles)
Seacat (two quad launchers) (see notes)
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6) (4—4·5 in *London*); 2—20 mm (single)
Main engines: COSAG; 2 sets geared steam turbines, 30 000 shp; 4 gas turbines, 30 000 shp; 2 shafts
Boilers: 2 Babcock & Wilcox
Speed, knots: 30
Complement: 471 (33 officers and 438 men)

All fitted with stablisers and are fully air-conditioned. Original cost varied from £13·8 million *(Hampshire)* to £16·8 million *(Antrim)*. Officially rated as "destroyers".

Appearance: *London* has mainmast stepped further aft than remainder. The last four of the class have distinctive tubular foremast and twin AKE radar aerial.

Costs: Running costs (at 1976 prices, excluding helicopter) £4·9 million per ship.

Disposals: As a result of the Defence Review *Hampshire* was paid off in April 1976—at least seven years before she might have been expected on the disposal list. *Devonshire* paid off for de-storing on 30 July 1978 and to disposal list 13 September 1978 and *Kent* has become an alongside training ship.
All the original four ships with Seaslug 1 were to have been converted to Seaslug 2 but money was not available. As missiles and stores related to Seaslug 1 ran out about 1976 there was no alternative but to pay off these ships. *London* will certainly be the next to be deleted.

Electrical: Two 1 000 kW turbo-alternators and three gas turbines alternators total 3 750 kW, at 440 V AC SCOT fitted in *London*.

Engineering: These were the first ships of their size to have COSAG. Boilers work at a pressure of 700 psi and a temperature of 950°F. The steam and gas turbines are geared to the same shaft. Each shaft set consists of a high pressure and low pressure steam turbine of 15 000 shp combined output plus two G.6 gas turbines each of 7 500 shp.

Gunnery: The 4·5 in guns are radar controlled fully automatic dual-purpose. The 20 mm guns were added for picket duties in South-east Asia, but have been retained for general close range duties.

Missiles: Four Exocet fitted in *Norfolk, Antrim, Glamorgan* and *Fife*. No reloads carried.
Seaslug Mk 2 (with limited SSM capability) in Exocet-fitted ships. Seaslug Mk 1 in *London*.

Radar: Air search: One Type 965M (single AKE-1 array in *London*–remainder double AKE-2).
Surveillance: One Type 992Q.
Height finder: One Type 278M.
Seaslug fire control: One Type 901.
Gunnery fire control: MRS 3 (forward) with Type 903.
Seacat fire control: GWS 22 with Type 904.
Navigation: One Type 978 or 1006.

Refits: *London* major refit 1975, *Glamorgan* 1977-80, *Fife* 1980-81, to be followed by *Antrim* and *Norfolk*.

Sonar: Types 176, 177, 182, 192.

GLAMORGAN

3/1981, Michael D. J. Lennon

NORFOLK

4/1980, Wright and Logan

ANTRIM

12/1980, Michael D. J. Lennon

LONDON

5/1980, Wright and Logan

DESTROYERS

3 + 3 "BROADSWORD" CLASS (TYPE 22)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BROADSWORD	F 88	Yarrow (Shipbuilders) Ltd, Glasgow	7 Feb 1975	12 May 1976	3 May 1979
BATTLEAXE	F 89	Yarrow (Shipbuilders) Ltd, Glasgow	4 Feb 1976	18 May 1977	28 Mar 1980
BRILLIANT	F 90	Yarrow (Shipbuilders) Ltd, Glasgow	25 Mar 1977	15 Dec 1978	15 May 1981
BRAZEN	F 91	Yarrow (Shipbuilders) Ltd, Glasgow	18 Aug 1978	4 Mar 1980	—
BOXER	F 92	Yarrow (Shipbuilders) Ltd, Glasgow	1 Nov 1979	—	—
BEAVER	F 93	Yarrow (Shipbuilders) Ltd, Glasgow	20 June 1980	—	—

Displacement, tons: 3 500 standard; 4 000 full load (first four)
Dimensions, feet (metres): 410 wl; 430 oa × 48·5 × 19·9
(125; 131·2 × 14·8 × 6) (first four)
471 oa × 48·5 × 19·9
(143·6 × 14·8 × 6) (Boxer onwards*)*
Aircraft: 2 Lynx Mk 2 helicopters with ASM and A/S torpedoes
Missiles: SSM; 4 Exocet (single cells);
SAM; Sea Wolf (two 6-barrelled launchers)
Guns: 2—40 mm/60
A/S weapons: 6 (2 triple) Mk 32 torpedo tubes for Mk 46; helicopter-carried A/S torpedoes
Main engines: COGOG arrangement of 2 Rolls-Royce Olympus gas turbines; 56 000 bhp and 2 Rolls-Royce Tyne gas turbines; 8 500 bhp; 2 shafts; cp propellers
Speed, knots: 30 (18 on Tynes)
Range, miles: 4 500 at 18 knots (on Tynes)
Complement: 223 (18 officers, 205 ratings)

Originally planned as successors to the "Leander" class, the construction of which ceased with the completion of the scheduled programme of 26 ships. Order for the first of class, *Broadsword,* was placed on 8 February 1974, *Battleaxe* ordered 4 September 1975. Order for *Brilliant* 7 September 1976, *Brazen* on 21 October 1977 and *Boxer* and *Beaver* on 25 April 1979. This class is primarily designed for A/S operations and is capable of acting as OTC and helicopter control ship.
It is reported that nine of this class are planned. *Boxer* and subsequent ships will be an enlarged version of this class, which is already 20 ft longer than the Type 42.
This extension will mean that these so-called "frigates" are of greater length than the "light-cruisers" of 60 years ago and over 100 ft longer than the "Tribal" class of the last war.

Aircraft: Although capable of carrying two helicopters normal complement only one. Helicopters will probably carry Sea Skua air-to-surface missiles.

Cost: *Broadsword* £68·6 million. *Battleaxe* £69·2 million. *Boxer* and *Beaver* anticipated £120 million each (1981 price).

Electrical: Four diesel generators = 4 000 kW.

Fire control: Sea Wolf, GWS 25; Exocet, GWS 50.

Radar: Surveillance: One Type 967; one Type 968.
Sea Wolf control: Two Type 910.
Navigation: One Type 1006.

Sonar: Types 2016 and 2008.

BATTLEAXE *2/1980, Michael D. J. Lennon*

BROADSWORD *6/1979, Wright and Logan*

BATTLEAXE *2/1980, Michael D. J. Lennon*

8 + 6 "SHEFFIELD " CLASS (TYPE 42)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SHEFFIELD	D 80	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	15 Jan 1970	10 June 1971	16 Feb 1975
BIRMINGHAM	D 86	Cammell Laird & Co Ltd, Birkenhead	28 Mar 1972	30 July 1973	3 Dec 1976
NEWCASTLE	D 87	Swan Hunter Ltd, Wallsend-on-Tyne	21 Feb 1973	24 Apr 1975	23 Mar 1978
GLASGOW	D 88	Swan Hunter Ltd, Wallsend-on-Tyne	16 Apr 1974	14 Apr 1976	24 May 1979
EXETER	D 89	Swan Hunter Ltd, Wallsend-on-Tyne	22 July 1976	25 Apr 1978	1 July 1980
SOUTHAMPTON	D 90	Vosper Thornycroft Ltd	21 Oct 1976	29 Jan 1979	July 1981
NOTTINGHAM	D 91	Vosper Thornycroft Ltd	6 Feb 1978	18 Feb 1980	1982
LIVERPOOL	D 92	Cammell Laird & Co Ltd, Birkenhead	5 July 1978	25 Sep 1980	Feb 1982
MANCHESTER	D 95	Vickers (Shipbuilding) Ltd, Barrow-in-Furness	19 May 1978	24 Nov 1980	1982
GLOUCESTER	D 96	Vosper Thornycroft Ltd	29 Oct 1979	—	—
EDINBURGH	D 97	Cammell Laird & Co Ltd, Birkenhead	8 Sep 1980	—	—
YORK	D 98	Swan Hunter Ltd, Wallsend-on-Tyne	18 Jan 1980	—	—
CARDIFF	D 108	Vickers (Shipbuilding) Ltd Barrow-in-Furness (see note)	6 Nov 1972	22 Feb 1974	24 Sep 1979
COVENTRY	D 118	Cammell Laird & Co Ltd, Birkenhead	29 Jan 1973	21 June 1974	20 Oct 1978

Displacement, tons: 3 500 standard; 4 100 full load (4 700 *Manchester* onwards)
Dimensions, feet (metres): 392 wl; 412 oa × 47 × 19 (screws) 13·9 (keel)
(119·5; 125 × 14·3 × 5·8; 4·2)
Dimensions, feet (metres): *(Manchester* onwards*)*:
434 wl; 463 oa × 49 × 19 (screws)
(132·3; 141 × 14·9 × 5·8)
Aircraft: 1 Lynx Mk 2 helicopter
Missiles: SAM; Sea Dart (1 twin launcher) (surface-to-surface capability)
Guns: 1—4·5 in *(115 mm)*/55 (Mk 8); 2—20 mm Oerlikon; 2 saluting
A/S weapons: Helicopter-launched Mk 44 torpedoes; 6 A/S torpedo tubes (triples) for Mk 46 (except *Sheffield*)
Main engines: COGOG; 2 Rolls-Royce Olympus TM3B gas turbines for full power; 56 000 shp; 2 Rolls-Royce Tyne RM1A gas turbines for cruising; 8 500 shp; cp propellers; 2 shafts
Speed, knots: 29
Oil fuel, tons: 600
Range: 4 000 miles at 18 knots
Complement: 270 (21 officers, 249 ratings) (accommodation for 312)

Designed to provide area air defence for a task force. This class is fitted with two pairs of stabilisers and twin rudders. The helicopter will carry the Sea Skua (CK 834) air-to-surface weapon for use against lightly defended surface ship targets such as fast patrol boats. Advantages of gas turbine propulsion include ability to reach maximum speed with great rapidity, reduction in space and weight and 25 per cent reduction in technical manpower.

Class: In order to provide space for improved weapon systems a radical change is being made to this class. From *Manchester* onwards the beam is being increased by 2 ft and the hull length by 42 ft (waterline).

Completion: *Cardiff,* whose completion was delayed by lack of man-power at Vickers Ltd, Barrow, was towed to Swan Hunters, Ltd, Hebburn in February 1976 for completion.

Costs: Building costs—*Sheffield* £23·2 million; *Birmingham* £30·9 million. *Coventry* £37·9 million, *Glasgow* £36·9 million, *Cardiff* £40·4 million, 1979 orders £78·5 million each, 1980 orders £85 million each. Running costs (1976 prices, excluding helicopter) £5·2 million per year per ship.

Electrical: Four diesel generators = 4 000 kW.

Electronics: Twin SCOT Skynet satellite communication aerials; ADAWS 4 for coordination of action information. ECM D/F.

Engineering: Considerable automation has allowed a number of machinery spaces to be operated unmanned. Cp propellers by Stone Manganese (Type XX).

Missiles: GWS 30 system. There are 22 Sea Dart missiles carried.

Orders: *Exeter* 22 January 1976. *Southampton* 17 March 1976. *Nottingham* 1 March 1977 *Liverpool* 27 May 1977, *Manchester* 10 November 1978, *Gloucester* 27 March 1979, *Edinburgh* and *York* 25 April 1979.

SHEFFIELD *2/1981, L. and L. van Ginderen*

CARDIFF *6/1980, Michael D. J. Lennon*

EXETER *2/1981, Michael D. J. Lennon*

Radar: Search: One Type 965R with double AKE-2 array and IFF. Type 1022 in *Exeter* onwards.
Surveillance and target indication: One Type 992Q.
Sea Dart fire control and target: Two Type 909.
Navigation, HDWS and helicopter control: One Type 1006.

Sonar: Type 184M hull-mounted with fixed dome. Type 162M classification.

BIRMINGHAM *5/1980, Wright and Logan*

FRIGATES

Note: A new Type 23 design is under discussion.

8 "AMAZON" CLASS (TYPE 21)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
AMAZON	F 169	Vosper Thornycroft Ltd, Woolston	6 Nov 1969	26 Apr 1971	11 May 1974
ANTELOPE	F 170	Vosper Thornycroft Ltd, Woolston	23 Mar 1971	16 Mar 1972	19 July 1975
ACTIVE	F 171	Vosper Thornycroft Ltd, Woolston	23 July 1971	23 Nov 1972	17 June 1977
AMBUSCADE	F 172	Yarrow (Shipbuilders) Ltd, Glasgow	1 Sep 1971	18 Jan 1973	5 Sep 1975
ARROW	F 173	Yarrow (Shipbuilders) Ltd, Glasgow	28 Sep 1972	5 Feb 1974	29 July 1976
ALACRITY	F 174	Yarrow (Shipbuilders) Ltd, Glasgow	5 Mar 1973	18 Sep 1974	2 July 1977
ARDENT	F 184	Yarrow (Shipbuilders) Ltd, Glasgow	26 Feb 1974	9 May 1975	13 Oct 1977
AVENGER	F 185	Yarrow (Shipbuilders) Ltd, Glasgow	30 Oct 1974	20 Nov 1975	15 Apr 1978

Displacement, tons: 2 750 standard; 3 250 full load (see note)
Dimensions, feet (metres): 360 wl; 384 oa × 41·7 × 19·5 (screws)
(109·7; 117 × 12·7 × 6)
Aircraft: 1 Lynx Mk 2 or Wasp helicopter
Missiles: SSM: 4 Exocet (single cells) (see note);
SAM: Seacat (1 quad launcher)
Guns: 1—4·5 in *(115 mm)*/55 (single Mk 8);
2—20 mm Oerlikon (singles)
A/S weapons: Helicopter launched torpedoes;
6 (2 triple) torpedo tubes for Mk 46 (in later ships)
Main engines: COGOG; 2 Rolls-Royce Olympus TM3B gas turbines; 56 000 bhp; 2 Rolls-Royce Tyne RM1A gas turbines for cruising; 8 500 shp; 2 shafts; cp, 5-bladed propellers
Speed, knots: 30; 18 on Tyne GTs
Range, miles: 4 000 at 17 knots; 1 200 at 30 knots
Complement: 175 (13 officers, and 162 ratings) (accommodation for 192)

A contract was awarded to Vosper Thornycroft, on 27 February 1968 for the design of a patrol frigate to be prepared in full collaboration with Yarrow Ltd. This is the first custom built gas turbine frigate (designed and constructed as such from the keel up, as opposed to conversion) and the first RN warship designed by commercial firms for many years.

A/S weapons: Torpedo tubes to be fitted in all ships, although these were not added at *Amazon's* first refit.

Costs: Building costs between £14·4 million *(Antelope)* and £28·3 million *(Avenger)*. Running costs (at 1976 prices, excluding helicopter) £3·3 million per ship per year.

Displacement: The inclusion of permanent ballast to improve stability has increased displacement above the designed figures.

Electronics: SCOT satellite communication fitted in last four ships during construction and remainder at refits. CAAIS fitted.

Missiles: Although Sea Wolf was planned for the last four, it was not ready in time so all mount Seacat. A retro-fitting may take place at second major refit. All fitted with Exocet.

Radar: Surveillance and Target Indicator: One Type 992Q.
Navigation: One Type 978.
Seacat control: Two GWS 24.
Gun fire control: Two Orion RTN-10X WSA 4 systems.
IFF Interrogator: Cossor Type 1010.
IFF Transponder: Plessey PTR 461.

Sonar: Type 184M hull-mounted.
Type 162M classification.

ANTELOPE *2/1981, Michael D. J. Lennon*

ARROW *6/1980, Wright and Logan*

AMAZON *6/1980, Michael D. J. Lennon*

ALACRITY *8/1980, Dr. Giorgio Arra*

26 "LEANDER" CLASS

IKARA GROUP (Batch 1)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*Conversion, completed*
AURORA	F 10	John Brown & Co (Clydebank) Ltd	1 June 1961	28 Nov 1962	9 Apr 1964	Mar 1976
EURYALUS	F 15	Scotts Shipbuilding & Eng Co, Greenock	2 Nov 1961	6 June 1963	16 Sep 1964	Mar 1976
GALATEA	F 18	Swan Hunter & Wigham Richardson, Wallsend	29 Dec 1961	23 May 1963	25 Apr 1964	Sep 1974
ARETHUSA	F 38	J. Samuel White & Co Ltd, Cowes	7 Sep 1962	5 Nov 1963	24 Nov 1965	Apr 1977
NAIAD	F 39	Yarrow & Co Ltd, Scotstoun, Glasgow	30 Oct 1962	4 Nov 1963	15 Mar 1965	July 1975
DIDO	F 104	Yarrow & Co Ltd, Scotstoun, Glasgow	2 Dec 1959	22 Dec 1961	18 Sep 1963	Oct 1978
LEANDER	F 109	Harland & Wolff Ltd, Belfast	10 Apr 1959	28 June 1961	27 Mar 1963	Dec 1972
AJAX	F 114	Cammell Laird & Co Ltd, Birkenhead	12 Oct 1959	16 Aug 1962	10 Dec 1963	Sep 1973

EXOCET GROUP (Batch 2)

CLEOPATRA	F 28	HM Dockyard, Devonport	19 June 1963	25 Mar 1964	4 Jan 1966	Nov 1975
SIRIUS	F 40	HM Dockyard, Portsmouth	9 Aug 1963	22 Sep 1964	15 June 1966	Oct 1977
PHOEBE	F 42	Alex Stephen & Sons Ltd, Glasgow	3 June 1963	8 July 1964	15 Apr 1966	Apr 1977
MINERVA	F 45	Vickers-Armstrong Ltd, Newcastle	25 July 1963	19 Dec 1964	14 May 1966	Mar 1979
DANAE	F 47	HM Dockyard, Devonport	16 Dec 1964	31 Oct 1965	7 Sep 1967	Sep 1980
JUNO*	F 52	John I. Thornycroft Ltd, Woolston	16 July 1964	24 Nov 1965	18 July 1967	—
ARGONAUT	F 56	Hawthorn Leslie Ltd, Hebburn-on-Tyne	27 Nov 1964	8 Feb 1966	17 Aug 1967	Mar 1980
PENELOPE	F 127	Vickers-Armstrong Ltd, Newcastle	14 Mar 1961	17 Aug 1962	31 Oct 1963	Mar 1981

BROAD-BEAMED GROUP (Batch 3)

ACHILLES	F 12	Yarrow & Co Ltd, Scotstoun, Glasgow	1 Dec 1967	21 Nov 1968	9 July 1970	—
DIOMEDE	F 16	Yarrow & Co Ltd, Scotstoun, Glasgow	30 Jan 1968	15 Apr 1969	2 Apr 1971	—
ANDROMEDA	F 57	HM Dockyard, Portsmouth	25 May 1966	24 May 1967	2 Dec 1968	Dec 1980
HERMIONE*	F 58	Alex Stephen & Sons Ltd, Glasgow	6 Dec 1965	26 Apr 1967	11 July 1969	—
JUPITER*	F 60	Yarrow & Co Ltd, Scotstoun, Glasgow	3 Oct 1966	4 Sep 1967	9 Aug 1969	—
BACCHANTE	F 69	Vickers-Armstrong Ltd, Newcastle	27 Oct 1966	29 Feb 1968	17 Oct 1969	—
APOLLO	F 70	Yarrow & Co Ltd, Scotstoun, Glasgow	1 May 1969	15 Oct 1970	28 May 1972	—
SCYLLA*	F 71	HM Dockyard, Devonport	17 May 1967	8 Aug 1968	12 Feb 1970	—
ARIADNE	F 72	Yarrow & Co Ltd, Scotstoun, Glasgow	1 Nov 1969	10 Sep 1971	10 Feb 1973	—
CHARYBDIS*	F 75	Harland & Wolff Ltd, Belfast	27 Jan 1967	28 Feb 1968	2 June 1969	

* Conversion

Displacement, tons: 2 450 standard;
2 860 full load (Ikara group);
3 200 full load (Exocet group);
2 500 standard; 2 962 full load (Broad-beamed group)
Dimensions, feet (metres): 360 wl; 372 oa × 41, 43 (broad-beamed) × 14·8 (keel), 18 (screws), 19 (screws, Exocet)
(109·7; 113·4 × 12·5, 13·1 × 4·5, 5·5, 5·8)
Aircraft: 1 Lynx Mk 2 or Wasp helicopter
Missiles: Ikara group: SAM; 2 quad Seacat
Exocet group: SSM; 4 MM 38 Exocet (fwd);
SAM; 3 quad Seacat (2 aft, 1 fwd)
Broad-beamed group: SAM; 1 quad Seacat (see *Conversion* note)
Guns: Ikara group: 2—40 mm/60
Exocet group: 2—40 mm/60
Broad-beamed group: 2—4·5 in *(115 mm)*/45 (twin Mk 6);
2—20 mm/70 (see *Conversion* note)
A/S weapons: Ikara group: Ikara (fwd)(GWS 40); 1 Limbo (aft) (see *Conversion* note)
Exocet group: 2 triple Mk 32 torpedo tubes
Broad-beamed group: 1 Limbo (see *Conversion* note)
Main engines: 2 double reduction geared turbines; 2 shafts; 30 000 shp (see notes)
Boilers: 2
Speed, knots: 28
Oil fuel, tons: 460
Range, miles: 4 000 at 15 knots
Complement: 257 (19 officers, 238 ratings); (Ikara group)
223 (20 officers, 203 ratings); (Exocet group)
260 (19 officers, 241 ratings); (Broad-beamed group)

This class, whose construction extended over ten years, was an improvement on the Type 12. As originally designed there were several significant improvements—a helicopter, VDS and long-range air warning radar being the most important. Recently a number of conversions have been put in hand (see notes below).

Conversions: With the exception of *Juno* whose conversion starts September 1981 all Batch 1 and 2 have completed conversion.
Of Batch 3 *Andromeda* has been completed and *Charybdis, Hermione, Jupiter* and *Scylla* are undergoing conversion. This includes the provision of four MM 38 Exocet launchers, the Sea Wolf SAM system, improved sonar Lynx helicopter modern EW equipment and ASW torpedo tubes. At the same time the 4·5-in turret, Seacat and Limbo are removed.

Conversion costs: Ikara group—£8·16 million;
Exocet group—£16·28 million;
Broad-beamed group—£40 million (1978).
These wide brackets of costs are due in great part to inflation for conversions extending from 1972-90 as well as the disruptive effect of strikes in the Royal dockyards.

Costs: Building costs—earlier ships averaged £4·7 million, later ones £7 million. Running costs (at 1976 prices, excluding helicopter)—£2·9 million per ship per year.

Electrical: 440 volts, 60 cycle AC; 1 900 kW in earlier ships, 2 500 kW in later ones.

Electronics: SCOT satellite communications being fitted at later conversions.

Engineering: The first ten have Y-100 machinery, the remainder of the "Leander" class Y-136. "Broad-beamed Leander" class have Y-160 machinery.

Gunnery: 4·5-in turret removed in conversions. 40 mm are not fitted in unconverted ships mounting Seacat. Conversions mount two single 40 mm abaft the bridge.

Radar: Air surveillance: One Type 965 with single AKE array (except in Ikara ships).
Combined air/surface warning: One Type 994.
Fire control: MRS 3/GWS 22.
Navigation: One Type 978. Type 1006 (conversions).

LEANDER (Ikara group) *6/1980 Michael D. J. Lennon*

ARGONAUT (Exocet group) *6/1980, Michael D. J. Lennon*

ANDROMEDA (Broad-beamed conversion) *2/1981, MOD(N)*

Sonar: Type 199 VDS was originally fitted in all but *Diomede*. In some the VDS has been removed leaving the well—in others the well has been plated over to provide extra accommodation for RMs. Can be replaced.
Batch 1: Types 170 and 184. VDS.
Batch 2: Type 184.
Batch 3: Type 2016 (originally 170 and 177).

9 "ROTHESAY" CLASS (MODIFIED TYPE 12) (1 TRIALS SHIP)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
YARMOUTH	F 101	John Brown & Co Ltd, Clydebank	29 Nov 1957	23 Mar 1959	26 Mar 1960
LOWESTOFT	F 103	Alex Stephen & Sons Ltd, Govan	9 June 1958	23 June 1960	18 Oct 1961
BRIGHTON	F 106	Yarrow & Co Ltd, Scotstoun	23 July 1957	30 Oct 1959	28 Sep 1961
ROTHESAY	F 107	Yarrow & Co Ltd, Scotstoun	6 Nov 1956	9 Dec 1957	23 Apr 1960
LONDONDERRY **	F 108	J. Samuel White & Co Ltd, Cowes	15 Nov 1956	20 May 1958	22 July 1960
FALMOUTH*	F 113	Swan Hunter, Wigham Richardson	23 Nov 1957	15 Dec 1959	25 July 1961
BERWICK (see note)	F 115	Harland & Wolff Ltd, Belfast	16 June 1958	15 Dec 1959	1 June 1961
PLYMOUTH	F 126	HM Dockyard, Devonport	1 July 1958	20 July 1959	11 May 1961
RHYL	F 129	HM Dockyard, Portsmouth	29 Jan 1958	23 Apr 1959	31 Oct 1960

* Refit ** Trials ship

Displacement, tons: 2 380 standard; 2 800 full load
Dimensions, feet (metres): 370 × 41 × 17·3 *(112·8 × 12·5 × 5·3)*
Aircraft: 1 Wasp helicopter
Missiles: SAM; Seacat (quad launcher) (not *Londonderry*)
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6) (not *Londonderry*)
A/S weapons: 1 Limbo 3-barrelled DC mortar (not *Londonderry*)
Main engines: 2 double reduction geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox
Speed, knots: 30
Oil fuel, tons: 400
Complement: 235 (15 officers and 220 ratings); 170 *(Londonderry)*

Provided under the 1954-55 programme. Originally basically similar to the "Whitby" class but with modifications in layout. *Falmouth* in Stand-by Squadron pending refit. *Lowestoft* engaged in trials. *Berwick* in Stand-by Squadron.

Cost: £3·6 million average building cost.

Electrical: Two turbo generators and two diesel generators in all ships. Total 1 140 kW. Alternating current, 440 volts, three phase, 60 cycles per second.

Engineering: Two Admiralty Standard Range turbines each rated at 15 000 shp. Propeller revolutions 220 rpm. Boilers 550 psi *(38·7 kg/cm²)* pressure and 850°F *(450°C)* temperature.

Modernisation: The "Rothesay" class was reconstructed and modernised from 1966-72 during which time they were equipped to operate a Westland Wasp helicopter armed with homing torpedoes. A flight deck and hangar were built on aft, necessitating the removal of one of their anti-submarine mortars. A Seacat replaced the 40 mm gun. A new operations room, new GFCS and full air-conditioning were provided.

Radar: Search: One Type 994.
Fire control: MRS 3.
Navigation: One Type 978.

Missiles: Optical Director for Seacat—GWS 20.

Sonar: New sonar fitted aft in *Lowestoft*.

Special Refits: *Londonderry* refitted at Rosyth from November 1975 to 11 October 1979 to become trials ship for Admiralty Surface Weapons Establishment. *Rothesay* started a major refit in 1978, completed 1980 with no external change in appearance. *Yarmouth* started two year refit February 1979. *Londonderry*'s appearance has been completely altered by removal of her weapons systems and all top-hamper abaft the funnel. The top-hamper has been replaced by two large portable trunked towers, the centre one being 40 ft high. She is used to test a wide range of new mechanical and electronic equipment, initially radar and radio. A secondary role is to provide navigation training facilities for young officers. Her screws have been replaced by pump-jet. From time to time the after tower is removed for considerable periods—a 30 mm A32 gun is occasionally mounted in its place.

RHYL *7/1980, L. and L. van Ginderen*

PLYMOUTH *2/1981, Michael D. J. Lennon*

LONDONDERRY *11/1980, Michael D. J. Lennon*

ROTHESAY *3/1981, Michael D. J. Lennon*

1 "SALISBURY" CLASS (TYPE 61)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
LINCOLN	F 99	Fairfield S.B. & Eng Co Ltd, Govan	20 May 1955	6 Apr 1959	7 July 1960

Displacement, tons: 2 170 standard; 2 408 full load
Dimensions, feet (metres): 330 wl; 339·8 oa × 40 × 15·5 (screws); 11·7 (keel)
(100·6; 103·6 × 12·2 × 4·7, 3·6)
Missiles: SAM; Seacat (quad launcher)
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6); 2—20 mm
A/S weapons: 1 Squid triple-barrelled DC mortar
Main engines: 8 ASR 1 diesels in three engine rooms; 2 shafts; 14 400 bhp; 4 engines geared to each shaft
Speed, knots: 24
Oil fuel, tons: 230
Range, miles: 2 300 at full power; 7 500 at 16 knots
Complement: 237 (14 officers and 223 ratings)

Originally class of four designed primarily for the direction of carrier-borne and shore-based aircraft. *Lincoln* ordered on 28 June 1951. Construction was all welded and largely prefabricated. The construction of three other ships *Exeter, Gloucester* and *Coventry* cancelled in 1957 being replaced by first three "Leander" class. Original lattice masts replaced by tower masts during 1960s. *Lincoln* was fitted with wooden bow sheathing for Cod War 1976 but has subsequently been returned to reserve in the Stand-By Squadron at Chatham pending transfer to Disposal List 1981.
Salisbury is an alongside training ship at *Raleigh*, Plymouth.

Cost: £3·3 million building cost.

Missiles: Optical director for Seacat. GWS 20.

"SALISBURY" Class — *8/1980, Michael D. J. Lennon*

Radar: Long range surveillance: One Type 965P with double AKE 2 array with IFF.
Combined warning: One Type 993.
Height finder: One Type 278.
Target indication: One Type 982.
Fire control: Mk 6M director with Type 275.
Navigation: One Type 978.

Sonar: Types 174 and 170B.

Transfer: *Llandaff* to Bangladesh as *Oomar Farooq* (F 16) on 1 December 1976.

1 "WHITBY" CLASS (TYPE 12)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
TORQUAY	F 43	Harland & Wolff Ltd, Belfast	11 Mar 1953	1 July 1954	10 May 1956

Displacement, tons: 2 150 standard; 2 560 full load
Dimensions, feet (metres): 360 wl; 369·8 oa × 41 × 17 (screws), 12·9 (keel)
(109·7; 112·7 × 12·5 × 5·2, 3·9)
Guns: 2—4·5 in *(115 mm)*/45 (twin Mk 6)
A/S weapons: 1 Limbo 3-barrelled DC mortar
Main engines: 2 sets dr geared turbines; 2 shafts; 30 000 shp
Boilers: 2 Babcock & Wilcox; pressure 550 psi *(38·7 kg/cm²)*; temperature 850°F *(454°C)*
Speed, knots: 30
Oil fuel, tons: 370
Complement: 225 (12 officers, and 213 ratings)

Ordered in 1951. Twin-rudders.

Class: Originally class of six. *Torquay* used as Navigation/Direction training and trials ship at Portsmouth, having a large deck-house aft and carrying the first CAAIS to go to sea. *Eastbourne,* alongside at Rosyth for engine-room trainees from HMS *Caledonia* and approved for disposal, 1978. *Scarborough* and *Tenby* scrapped after transfer to Pakistan due to the high quoted cost of modernisation.

Radar: Search: One Type 993.
Navigation: Type 1006.
Fire control: Type 275 (Mk 6M DCT).

TORQUAY — *6/1980, Wright and Logan*

Sonar: Types 177, 170 and 162.

HELICOPTER SUPPORT SHIP

Name	*No.*	*Builders*	*Commissioned*
ENGADINE	K 08	Henry Robb Ltd, Leith	15 Dec 1967

Displacement, tons: 9 000 full load
Measurement, tons: 6 384 gross; 2 848 net; 4 520 deadweight
Dimensions, feet (metres): 424 × 58·4 × 22·1
(129·3 × 17·8 × 6·7)
Aircraft: 4 Wessex and 2 Wasp or 2 Sea King helicopters
Main engine: 1 Sulzer two stroke, 5-cyl turbocharged 5RD68 diesel; 5 500 bhp = 14·5 knots
Complement: RFA: 63 (15 officers, 48 men)
RN: 14 (2 officers, 12 ratings)
Accommodation for additional RN: 113 (29 officers and 84 ratings)

Projected under the 1964-65 Navy Estimates. Ordered on 18 August 1964. Laid down on 9 August 1965. Officially named on 15 September 1966. Largest ship then built by the company. Intended for the training of helicopter crews in deep water operations. She does not carry her own flight but embarks aircraft as necessary. Fitted with Denny Brown stabilisers, the only RFA vessel so equipped. Also fitted with PTA (Pilotless Target Aircraft) hangar immediately abaft the funnel.

ENGADINE — *10/1980, L. and L. van Ginderen*

AMPHIBIOUS WARFARE FORCES

Notes: (a) The prototype of a new type of landing craft is under trial. Main order deferred due to financial restrictions. These will eventually replace the current force of landing craft.
(b) See *Bacchus* (Store Carrier—AK).

2 ASSAULT SHIPS (LPD)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
FEARLESS	L 10 (ex-L 3004)	Harland & Wolff Ltd, Belfast	25 July 1962	19 Dec 1963	25 Nov 1965
INTREPID	L 11 (ex-L 3005)	John Brown & Co (Clydebank) Ltd	19 Dec 1962	25 June 1964	11 Mar 1967

Displacement, tons: 11 060 standard; 12 120 full load; 16 950 dock flooded
Dimensions, feet (metres): 500 wl; 520 oa × 80 × 20·5 (keel) *(152·4; 158·5 × 24·4 × 6·2)*
Draught, flooded: 32 *(9·8)* aft; 23 *(7)* fwd
Landing craft: 4 LCM(9) in dock; 4 LCVP at davits
Vehicles: Specimen load: 15 tanks, seven 3 ton and 20 quarter-ton trucks
Aircraft: Flight deck facilities for 5 Wessex helicopters
Missiles: SAM; Seacat (4 quad launchers)
Guns: 2—40 mm/70 Bofors
Main engines: 2 EE turbines; 22 000 shp; 2 shafts
Boilers: 2 Babcock & Wilcox
Speed, knots: 21
Range, miles: 5 000 at 20 knots
Complement: 580 (see *Troops* note)

Landing craft are floated through the open stern by flooding compartments of the ship and lowering her in the water. They are able to deploy tanks, vehicles and men and have seakeeping qualities much superior to those of tank landing ships as well as greater speed and range. The helicopter platform is also the deckhead of the dock. Building cost: *Fearless* £11·25 million; *Intrepid* £10·5 million.
Intrepid to reserve in 1976 for refit in 1977-1978—relieved *Fearless* November 1978—latter towed from Portsmouth for commercial refit by Tyne Ship Repair Group July 1980-July 1981.

Countermeasures: Mount 2 Knebworth Corvus launchers.

Electrical: Power at 440V 60Hz 3-phase AC is supplied by four 1 000 kW AEI turbo-alternators.

Electronics: Fitted with CAAIS.

Engineering: The two funnels are staggered across the beam of the ship. Have two machinery spaces with one turbine and one boiler installed in each space. The turbines were manufactured by the English Electric Co, Rugby, the gearing by David Brown & Co, Huddersfield. Boilers work at a pressure of 550 psi and a temperature of 850°F. Two five-bladed propellers, 12·5 ft diameter, 200 rpm in *Fearless*.

Operational: Each ship is fitted out as a Naval Assault Group/Brigade Headquarters with an Assault Operations Room from which naval and military personnel can mount and control the progress of an assault operation.

Radar: Air and surface search: One Type 994.
Navigation: One Type 978.

Satellite system: The Royal Navy fitted its first operational satellite communications system in *Intrepid* in 1969, the contract having been awarded to Plessey Radar.

Troops: Each ship can carry 380 to 400 troops at ship's company standards. An overload of 700 marines and military personnel can be accommodated for short periods.

INTREPID *1/1981, Michael D. J. Lennon*

INTREPID *1/1981, Michael D. J. Lennon*

6 LOGISTIC LANDING SHIPS (RFA MANNED)

Name	No.	Builders	Laid down	Launched	Commissioned
SIR BEDIVERE	L 3004	Hawthorn Leslie, Hebburn-on-Tyne	Oct 1965	20 July 1966	18 May 1967
SIR GALAHAD	L 3005	Alex Stephen, Glasgow	Feb 1965	19 Apr 1966	17 Dec 1966
SIR GERAINT	L 3027	Alex Stephen, Glasgow	June 1965	26 Jan 1967	12 July 1967
SIR LANCELOT	L 3029	Fairfield, Glasgow	Mar 1962	25 June 1963	16 Jan 1964
SIR PERCIVALE	L 3036	Hawthorn Leslie, Hebburn-on-Tyne	Apr 1966	4 Oct 1967	23 Mar 1968
SIR TRISTRAM	L 3505	Hawthorn Leslie, Hebburn-on-Tyne	Feb 1966	12 Dec 1966	14 Sep 1967

Displacement, tons: 3 270 light; 5 674 full load (3 370 and 5 550 in *Sir Lancelot*)
Dimensions, feet (metres): 380 wl; 412·1 oa × 59·8 × 13 *(115·8; 125·1 × 19·6 × 4·3)*
Guns: Fitted for 2—40 mm—not normally carried
Main engines: 2 Mirrlees 10-cyl diesels; 9 400 bhp; 2 shafts; (2 Denny/Sulzer diesels; 9 520 bhp in *Sir Lancelot*)
Speed, knots: 17
Oil fuel, tons: 850
Range, miles: 8 000 at 15 knots
Complement: 68 (18 officers, 50 ratings)
Military lift: 340 (534 with hard lying)

Sir Lancelot was the prototype of this class which was originally built for the Army but transferred to RFA in 1970. Fitted for bow and stern loading with drive-through facilities and deck-to-deck ramps. Facilities provided for on-board maintenance of vehicles and for laying out pontoon equipment.

Aircraft: Helicopters can be operated from the well-deck and the after platform by day or night in the later ships. In *Sir Lancelot* well-deck operations are limited to fair weather-day conditions. If required to carry helicopters, 11 can be stowed on the Tank Deck and nine on the Vehicle Deck.

SIR LANCELOT — *2/1981, L. and L. van Ginderen*

Cranes: One 20 ton, two 4·5 ton cranes.

Load: Can carry 16 main battle tanks, 34 mixed vehicles, 120 tons POL and 30 tons ammunition.

2 LOGISTIC LANDING CRAFT (RCT)

Name	No.	Builders	Laid down	Launched	Commissioned
ARDENNES	L 4001	Brooke Marine, Lowestoft	27 Aug 1975	29 July 1976	1977
ARAKAN	L 4003	Brooke Marine, Lowestoft	16 Feb 1976	23 May 1977	1978

Displacement, tons: 870 light; 1 600 full load
Dimensions, feet (metres): 230 wl; 240 oa × 45·9 × 5·8 *(69·9; 73·2 × 14 × 1·8)*
Main engines: 2 Mirrlees-Blackstone ESL8 MGR diesels; 2 000 bhp = 10·3 knots
Fuel, tons: 150 dieso
Range, miles: 4 000 at 10 knots
Complement: 35 (4 officers, 31 men) (plus 34 troops)

Both ordered in October 1974. Can carry 350 ton of stores, five Chieftain tanks or eleven 8 ton lorries.

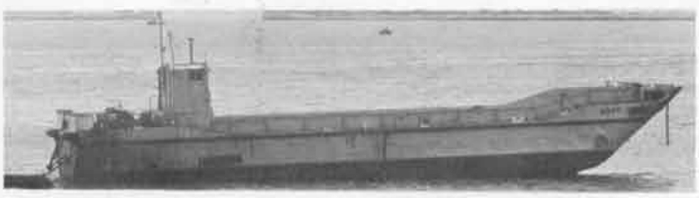
ARDENNES — *12/1980, L. and L. van Ginderen*

14 LCM 9 TYPE

Name	No.	Builders	Commissioned
—	L 700	Brooke Marine Ltd	1964
—	L 701	Brooke Marine Ltd	1964
—	L 702	Brooke Marine Ltd	1965
—	L 703	Brooke Marine Ltd	1965
—	L 704	R. Dunston (Thorne)	1964
—	L 705	R. Dunston (Thorne)	1965
—	L 706	R. Dunston (Thorne)	1965
—	L 707	R. Dunston (Thorne)	1965
—	L 708	R. Dunston (Thorne)	1966
—	L 709	R. Dunston (Thorne)	1966
—	L 710	J. Bolson (Poole)	1965
—	L 711	J. Bolson (Poole)	1965
—	L 3507	Vosper Ltd	1963
—	L 3508	Vosper Ltd	1963

Displacement, tons: 75 light; 176 loaded
Dimensions, feet (metres): 85 × 21·5 × 5·5 *(25·7 × 6·5 × 1·7)*
Capacity: 2 tanks or 100 tons of vehicles
Main engines: 2 Paxman 6-cyl YHXAM diesels; 2 shafts; 624 bhp = 10 knots. Screws enclosed in Kort nozzles to improve manoeuvrability

L 3507 and L 3508 were the first operational minor landing craft to be built since the Second World War. Ramped in the traditional manner forward, a completely enclosed radar-fitted wheelhouse is positioned aft. Upon completion they carried out familiarisation trials to perfect the new techniques required in launching and recovering LCMs from the flooded sterns of the parent assault ships. Now operated by the Royal Marines. Four each of the 700 Series allocated to assault ships.



LCM 704 (from HMS *Fearless*) — *11/1978, Michael D. J. Lennon*

LCM 3507 (RCT) — *7/1978, Leo van Ginderen*

2 LCM 7 TYPE

7037 **7100**

Displacement, tons: 28 light; 63 loaded
Dimensions, feet (metres): 60·2 × 16 × 3·7 *(18·4 × 4·9 × 1·2)*
Main engines: 290 bhp = 9·8 knots

Employed as naval servicing boats and store carriers. Re-engined with Gray Marine diesels.

12 "AVON" CLASS RPL (RCT)

AVON RPL 01
BUDE RPL 02
CLYDE RPL 03
DART RPL 04
EDEN RPL 05
FORTH RPL 06
GLEN RPL 07
HAMBLE RPL 08
ITCHEN RPL 09
KENNET RPL 10
LODDON RPL 11
MEDWAY RPL 12

Displacement, tons: 100 (full load) (approx)
Dimensions, feet (metres): 72·2 × 20·5 × 5·5 *(22 × 6·2 × 1·7)*
Main engines: 2 diesels; 2 shafts; 870 bhp = 9 knots
Complement: 6

Ramp Powered Lighters (RPL) manned by RCT and available for short coastal hauls. Built by White and Saunders-Roe, Isle of Wight in 1961-67. Can carry one Centurion tank. *Itchen, Clyde* and *Dart* stationed in Hong Kong, *Eden* and *Forth* in Cyprus, some in Belize, remainder in the UK. *Avon* used for experimental work.

AVON *7/1980, L. and L. van Ginderen*

26 LCVP 1, 2 and 3

LCVP 1: 102, 112, 118, 120, 123, 127, 128, 134, 136
LCVP 2: 142-149
LCVP 3: 150-158

Displacement, tons: 8·5 light; 13·5 full load
Dimensions, feet (metres): 41·5 (LCVP 2); 43 (LCVP 3) × 10 × 2·5 *(12·7; 13·1 × 3·1 × 0·8)*
Main engines: 2 Foden diesels; 130 bhp = 8 knots; 200 bhp = 10 knots (LCVP 2)

LCVP 2s carried by *Intrepid* and *Fearless* can carry 35 troops or two Land Rovers. Crew three. LCA 2s were redesignated LCVPs (Landing Craft Vehicle and Personnel) in 1966. There were also a number of variations and prototypes of about the same length (43 ft).

Note: Raiding Landing Craft, including LCR 5507 and 5508, and Navigational Landing Craft, including LCN 604 (ex-LCR 5505) also in service.

LCVP (alongside LCM 9) *9/1978, John G. Callis*

3 LCP (L) (3)

LCP (L) (3) 501, 503, 556

Displacement, tons: 6·5 light; 10 loaded
Dimensions, feet (metres): 37 × 11 × 3·2 *(11·3 × 3·4 × 1)*
Main engines: 225 bhp = 12 knots

MINE WARFARE FORCES

Notes: (a) Consideration is being given to the design of a cheaper type of minehunter.
(b) 28 PAP 104 ordered from France for minehunters.

Name	*No.*	*Builders*	*Commissioned*
ABDIEL	N 21	John I. Thornycroft Ltd, Woolston, Southampton	17 Oct 1967

Displacement, tons: 1 375 standard; 1 500 full load
Dimensions, feet (metres): 265 × 38·5 × 10 *(80·8 × 11·7 × 3)*
Mines: 44 carried
Main engines: 2 Paxman Ventura 16-cyl pressure charged diesels; 1 250 rpm; 2 690 bhp = 16 knots
Complement: 98 (8 officers, 90 ratings)

Exercise minelayer ordered in June 1965. Laid down on 23 May 1966. Launched on 27 January 1967. Main gearing supplied by Messrs Wisemans. Her function is to support mine countermeasure forces, maintain these forces when they are operating away from their shore bases and minelaying. Cost £1·5 million.

ABDIEL *7/1980, L. and L. van Ginderen*

2 + 7 "HUNT" CLASS (MINESWEEPERS/MINEHUNTERS—COASTAL)

Name	*No.*	*Builders*	*Commissioned*
BRECON	M 29	Vosper Thornycroft Ltd	21 Mar 1980
LEDBURY	M 30	Vosper Thornycroft Ltd	July 1981
CATTISTOCK	M 31	Vosper Thornycroft Ltd	late 1981
COTTESMORE	M 32	Yarrow, Glasgow	—
BROCKLESBY	M 33	Vosper Thornycroft Ltd	—
MIDDLETON	M 34	Yarrow, Glasgow	—
CHIDDINGFOLD	—	Vosper Thornycroft Ltd	—
DULVERTON	—	Vosper Thornycroft Ltd	—
HURWORTH	—	Vosper Thornycroft Ltd	—

Displacement, tons: 615 standard; 725 full load
Dimensions, feet (metres): 187 wl; 197 oa × 32·8 × 8·2 *(57; 60 × 10 × 2·5)*
Gun: 1—40 mm
Main engines: 2 Ruston-Paxman 9-59K Deltic diesels; 1 900 bhp = 16 knots (has hydraulic drive for slow running up to 8 knots)
Range, miles: 1 500 at 12 knots
Complement: 45 (6 officers, 39 ratings)

A class of MCM Vessels combining both hunting and sweeping capabilities. Hulls of GRP. Equipped with two French PAP 104 mine destructor outfits. *Brecon* laid down 15 September 1975, launched 21 June 1978. *Ledbury* ordered 31 March 1977, laid down 5 October 1977, launched 5 December 1979. *Cattistock* laid down 12 July 1979, launched 22 January 1981. Agreement of March 1976 provided for Yarrow Ltd equipping their yard to build ships of this class. *Cattistock, Cottesmore* and *Middleton* ordered 29 January 1979, *Brocklesby* 24 April 1979. *Chiddingfold, Dulverton* and *Hurworth* 1981.

Cost: £24—30 million each.

Engineering: Deltic Type 9-55B (750 hp) for pulse generator and auxiliary drive. Three 200 kW and one 60 kW generators.

Sonar: Type 193M.

LEDBURY *1/1981, MOD*

1 MINESWEEPER/MINEHUNTER (COASTAL)

Name	*No.*	*Builders*	*Commissioned*
WILTON	M 1116	Vosper Thornycroft Ltd, Woolston	14 July 1973

Displacement, tons: 450 full load
Dimensions, feet (metres): 145 wl; 153 oa × 28·8 × 8·5 *(44·2; 46·3 × 8·8 × 2·5)*
Gun: 1—40 mm Mark 7
Main engines: 2 English Electric Deltic 18-7A diesels; 2 shafts; 3 000 bhp = 16 knots
Range, miles: 2 300 at 13 knots
Complement: 37 (5 officers and 32 ratings)

The world's first GRP warship. Contract signed on 11 February 1970. Laid down 16 November 1970 and launched on 18 January 1972. Built to the existing minehunter design. Similar to the "Ton" class and fitted with reconditioned machinery and equipment from the scrapped *Derriton*. Twin active rudders (fitted with small propellers). Four 60 kW generators.

Cost: Building cost £2·3 million.

Radar: Types 975 and 955M (IFF).

Sonar: Type 193M.

WILTON *7/1980, Leo van Ginderen*

30 "TON" CLASS

14 MINEHUNTERS

Name	No.	Builders	Commissioned
BILDESTON	M 1110	J. S. Doig (Grimsby) Ltd	28 Apr 1953
BRERETON*	M 1113	Richards Ironworks	9 July 1954
BRINTON	M 1114	Cook Welton and Gemmell	4 Mar 1954
BRONINGTON	M 1115	Cook Welton and Gemmell	4 June 1954
BOSSINGTON	M 1133	J. I. Thornycroft & Co, Southampton	11 Dec 1956
GAVINTON	M 1140	J. S. Doig (Grimsby) Ltd	14 July 1954
HUBBERSTON	M 1147	Fleetlands Shipyards Ltd, London	14 Oct 1955
IVESTON	M 1151	Philip & Sons Ltd, Dartmouth	29 June 1955
KEDLESTON*	M 1153	William Pickersgill & Son	2 July 1955
KELLINGTON*	M 1154	William Pickersgill & Son	4 Nov 1955
KIRKLISTON	M 1157	Harland & Wolff Ltd, Belfast	21 Aug 1954
MAXTON	M 1165	Harland & Wolff Ltd, Belfast	19 Feb 1957
NURTON	M 1166	Harland & Wolff Ltd, Belfast	21 Aug 1957
SHERATON†	M 1181	White's Shipyard Ltd, Southampton	24 Aug 1956

* RNR Training Ship
** FPS
† Refit

16 MINESWEEPERS—COASTAL

Name	No.	Builders	Commissioned
ALFRISTON*	M 1103	J. I. Thornycroft & Co., Southampton	16 Mar 1954
BICKINGTON**	M 1109	White's Shipyard Ltd, Southampton	27 May 1954
CRICHTON**	M 1124	J. S. Doig (Grimsby) Ltd	23 Apr 1954
CUXTON**	M 1125	Camper and Nicholson Ltd, Gosport	1953
GLASSERTON*	M 1141	J. S. Doig (Grimsby) Ltd	31 Dec 1954
HODGESTON*	M 1146	Fleetlands Shipyards Ltd, London	17 Dec 1954
LALESTON*	H 1158	Harland and Wolff	1954
POLLINGTON**	M 1173	Camper & Nicholson Ltd, Gosport	5 Sep 1958
SHAVINGTON**	M 1180	White's Shipyard Ltd, Southampton	1 Mar 1956
UPTON	M 1187	J. I. Thornycroft & Co, Southampton	24 July 1956
WALKERTON**	M 1188	J. I. Thornycroft & Co, Southampton	10 Jan 1958
WOTTON**	M 1195	Philip & Sons Ltd, Dartmouth	13 June 1957
SOBERTON**	M 1200	Fleetlands Shipyards Ltd, Gosport	17 Sep 1957
STUBBINGTON**	M 1204	Camper & Nicholson Ltd, Gosport	30 July 1957
LEWISTON	M 1208	Herd & Mackenzie, Buckie, Banff	16 June 1960
CROFTON*	M 1216	J. I. Thornycroft & Co, Southampton	26 Aug 1958

* RNR Training Ship
** FPS

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·3 × 8·5 × 2·5)*
Guns: Vary in different ships, some sweepers having no 40 mm, some 1—40 mm and 2—20 mm whilst hunters have 1—40 mm
Main engines: 2 diesels; 2 shafts; 2 500 bhp (JVSS 12 Mirrlees in M 1141 and 1158); 3 000 bhp (18A-7A Deltic in remainder)
Speed, knots: 15
Oil fuel, tons: 45
Range, miles: 2 500 at 12 knots
Complement: 29 (38 in minehunters, 5 officers and 33 ratings)

The survivors of a class of 118 built between 1953 and 1960, largely as a result of lessons from the Korean War. John I. Thornycroft & Co Ltd, Southampton were the lead yard for these ships which have double mahogany hull on aluminium frames and incorporate a considerable amount of non-magnetic material. Fitted with Vospers stabilisers. The majority has now been fitted with "Cascover" nylon in place of copper sheathing. *Cuxton* commissioned finally in October 1975 after 22 years in "moth-balls". *Glasserton* in the Stand-by Squadron—approved for disposal.

Appearance: Frigate-type enclosed bridges in *Bildeston, Brereton, Brinton, Crofton, Cuxton, Iveston, Kellington, Kirkliston, Lewiston, Bossington, Bronington, Gavinton, Hubberston, Kedleston, Maxton, Pollington, Nurton, Sheraton, Soberton, Stubbington* and *Walkerton*. Semi-enclosed bridges fitted in remainder.

Conversions: *Beachampton, Monkton, Wasperton, Wolverton* and *Yarnton* were converted into coastal patrol vessels late in 1971, (see Light Forces). *Laleston* was converted into diving training ship in 1966-67 (see RNR note below).

Cost: Average running cost at 1976 prices £0·3 million per ship.

Engineering: Earlier vessels had Mirrlees diesels, but later units had Napier Deltic lightweight diesels. *Highburton*, the first with Deltic diesels, was accepted on 21 April 1955. All minehunters have Deltics and active rudders. Generators for electrical power are in a separate engine room in Mirrlees, Deltic-conversions and minehunters. Deltic built minesweepers have a generator in the main engine-room and two generators in the generator-room. Mirrlees still fitted in *Glasserton and Laleston*. Three-bladed propellers, 6 ft diameter, 400 rpm.

Fishery protection: Under the command of Captain FPS and based at Rosyth this duty is carried out by the Offshore Division (see "Island" class under Light Forces) and the Coastal Division consisting of "Ton" class. In 1981 these duties are carried out by *Bickington, Cuxton, Crichton, Pollington, Shavington, Soberton, Stubbington, Walkerton* and *Wotton*. All FPS ships carry a large Signal Projector (searchlight).

Radar: Type 1006.

Royal Naval Reserve: The practice of temporarily renaming ships attached to RNR divisions has been abandoned. The nine ships of the 10th MCM Squadron now operate as follows: *Kedleston*—Forth; *Brereton*—Tyne; *Glasserton*—London; *Kellington*—Sussex; *Alfriston*—Solent; *Crofton*—Mersey; *Hodgeston*—Clyde; *Laleston*—Ulster. Other RNR training ships are provided from the "Venturer" class. *Laleston* is now officially classified as a coastal patrol craft.

Sonar: Type 193 in minehunters (Type 193M in *Iveston*).

Transfers: Argentina (six in 1968), Australia (six in 1962), Ghana (one in 1964), India (four in 1956), Ireland (three in 1971), Malaysia (seven in 1960-68), South Africa (ten in 1958-59).

KELLINGTON (RNR) *7/1980, Michael D. J. Lennon*

CRICHTON (FPS/Sweeper) *7/1980, Michael D. J. Lennon*

GAVINTON (Hunter) *7/1980, Michael D. J. Lennon*

BILDESTON (Hunter) *5/1980, Michael D. J. Lennon*

NURTON (Hunter) *5/1980, Wright and Logan*

BOSSINGTON (Hunter) *5/1980, Wright and Logan*

0 + 12 MINESWEEPERS—MEDIUM

To counter the increasing threat of minelaying in deeper waters procurement of 12 ships is planned, based on a commercial stern-trawler design. Tenders for construction of such ships received in 1981.

2 "VENTURER" CLASS (MINESWEEPERS—MEDIUM)

Name	*No.*	*Builders*	*Commissioned*
ST. DAVID (ex-*Suffolk Monarch*)	M 07	Cubow Ltd, Woolwich	1972
VENTURER (ex-*Suffolk Harvester*)	M 08	Cubow Ltd, Woolwich	1973

Measurement, tons: 392 gross; 134 net
Dimensions, feet (metres): 131·7 × 29·2 × 12·8 *(39·9 × 8·9 × 3·9)*
Main engines: 2 Mirrlees-Blackstone diesels; 2 000 hp; Kort nozzle = 14 knots

Both were designed as stern trawlers. *St. David* was converted into a Stand-by Safety Vessel for offshore installations in 1976. Chartered by Ministry of Defence in 1978. Unarmed. Have navigational radar. Act as RNR training ships—*Venturer* with Severn Division and *St David* with South Wales Division.

Future: These are the forerunners of the Minesweepers—Medium class of comparatively inexpensive minesweepers to back up the very costly "Hunt" class and listed separately earlier in this section. These two ships have been involved in successful trials of deep-sweeping gear and techniques.

ST. DAVID *12/1978, Michael D. J. Lennon*

1 "LEY" CLASS M 2001 SERIES (MINEHUNTERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
AVELEY	M 2002	J. S. White & Co Ltd, Cowes	1953

Displacement, tons: 123 standard; 164 full load
Dimensions, feet (metres): 107 × 21·3 × 5·5 *(32·6 × 6·5 × 1·7)*
Main engines: 2 Paxman diesels; 700 bhp = 13 knots
Complement: 15 (2 officers, 13 ratings)

The "Ley" class, originally of ten ships, differed from the "Ham" class. They were of composite (non-magnetic metal and wooden) construction, instead of all wooden construction. Their superstructure and other features also differed. They had no winch or sweeping gear, as they were minehunters, not sweepers and had lower powered engines and cp propellers. *Aveley* is attached to Plymouth.

AVELEY *4/1979, Michael D. J. Lennon*

3 "HAM" CLASS (MINESWEEPERS—INSHORE)

Name	*No.*	*Builders*	*Commissioned*
DITTISHAM	M 2621	Fairlie Yacht Slip	1954
FLINTHAM	M 2628	Bolson & Co	1955
THORNHAM (Aberdeen)	M 2793	Taylor, Shoreham	1957

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 2601 Series: 106·5 × 21·3 × 5·5 *(32·5 × 6·5 × 1·7)*; *Thornham:* 107·5 × 22 × 5·8 *(32·8 × 6·7 × 1·8)*
Gun: 1—20 mm Oerlikon fwd (not in *Thornham*)
Main engines: 2 Paxman diesels; 1 100 bhp = 14 knots
Oil fuel, tons: 15
Complement: 15 (2 officers, 13 ratings)

The first inshore minesweeper, *Inglesham*, was launched by J. Samuel White & Co Ltd, Cowes, on 23 April 1952. The 2601 series were of composite construction. In all 95 of this class were built.
Thornham attached to Aberdeen University RNU, other two at Plymouth, as tenders to new entry establishment, HMS *Raleigh*.

Conversions: As a result of a decision in 1962 several of this class were saved from deletion and converted for other tasks.

Transfers: Australia (three in 1966-68), France (15 in 1954-55), Ghana (two in 1959), India (two in 1955), Libya (two in 1963), Malaysia (four in 1958-59), South Yemen (three in 1967). Ships subsequently returned are not listed.

DITTISHAM *7/1979, L. and L. van Ginderen*

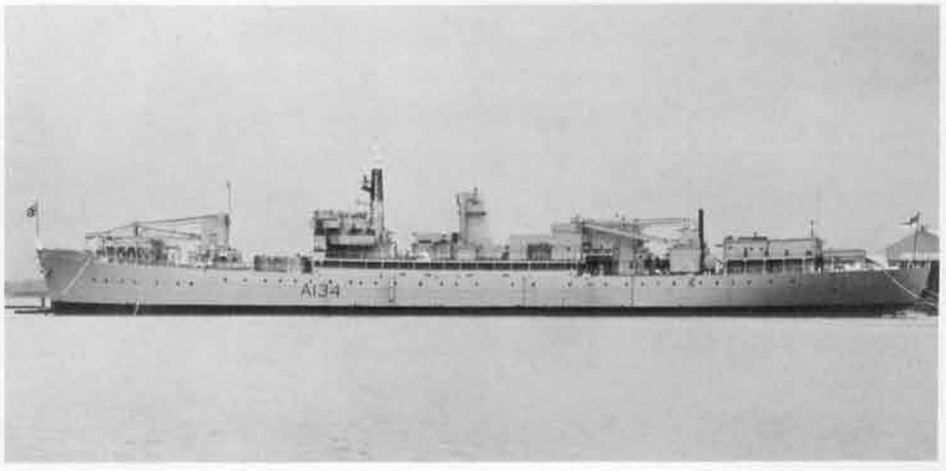
SUPPORT SHIPS

2 "HEAD" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
RAME HEAD	A 134	Burrard D.D. Co, Vancouver	12 July 1944	22 Nov 1944	18 Aug 1945
BERRY HEAD	A 191	North Vancouver Ship Repairers	15 June 1944	21 Oct 1944	30 May 1945

Displacement, tons: 9 000 standard; 11 270 full load
Dimensions, feet (metres): 441·5 × 57·5 × 22·5 *(134·6 × 17·5 × 6·9)*
Guns: 11—40 mm
Main engines: Triple expansion; 2 500 ihp
Boilers: 2 Foster-Wheeler
Speed, knots: 10 approx
Oil fuel, tons: 1 600 capacity
Complement: 425

Escort Maintenance Ships. To reserve in 1972.
Rame Head accommodation ship at Portsmouth since June 1976. *Berry Head*, at Devonport.



RAME HEAD *8/1979, Ron Wright*

ROYAL YACHT

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
BRITANNIA	A 00	John Brown & Co Ltd, Clydebank	July 1952	16 Apr 1953	14 Jan 1954

Displacement, tons: 3 990 light; 4 961 full load
Measurement, tons: 5 769 gross
Dimensions, feet (metres): 412·2 × 55 × 17 *(125·7 × 16·8 × 5·2)*
Main engines: Single reduction geared turbines; 2 shafts; 12 000 shp = 21 knots (22·5 trials)
Boilers: 2
Oil fuel, tons: 330 (510 with auxiliary fuel tanks)
Range, miles: 2 800 at 20 knots; 3 200 at 18 knots; 3 675 at 14 knots
Complement: 277 (21 officers, 256 ratings)

Designed as a medium sized naval hospital ship for use by Her Majesty The Queen in peacetime as the Royal Yacht. Construction conformed to mercantile practice. Fitted with Denny-Brown single fin stabilisers to reduce roll in bad weather from 20 to 6 degrees. Cost £2·098 million. To pass under the bridges of the St. Lawrence Seaway when she visited Canada, the top 20 ft of her mainmast and the radio aerial on her foremast were hinged in November 1958 so that they could be lowered as required.

Radar: Navigation: One Type 1006.

BRITANNIA (carrying the Lord Warden of the Cinque Ports, H.M. Queen Elizabeth, the Queen Mother)

8/1979, Wright and Logan

ICE PATROL SHIP

Name	*No.*	*Laid down*	*Launched*	*Commissioned*
ENDURANCE (ex-*Anita Dan*)	A 171	1955	May 1956	Dec 1956

Displacement, tons: 3 600
Measurement, tons: 2 641 gross
Dimensions, feet (metres): 305 (including helicopter deck extension); 300 oa × 46 × 18 *(93; 91·5 × 14 × 5·5)*
Aircraft: 2 Wasp helicopters
Guns: 2—20 mm
Main engine: 1 Burmeister & Wain 550 VTBF diesel; 3 220 ihp; 1 shaft
Speed, knots: 14·5
Range, miles: 12 000 at 14·5 knots
Complement: 119 (13 officers, 106 men, including a small Royal Marine detachment) plus 12 spare berths for scientists

Built by Krögerwerft, Rendsburg. Purchased from J. Lauritzen Lines, Copenhagen (announced on 20 February 1967). Strengthened for operation in ice. Converted by Harland & Wolff, Belfast 1967-68 into an ice patrol ship for southern waters, undertaking hydrographic and oceanographic surveys and acting as support ship for the British Antarctic Survey and guard vessel. Original cost £1·8 million.
An unusual feature for one of HM ships is her hull painted a vivid red for easy identification in the ice.

Communications: At 1978 refit in Chatham was fitted with Marisat communication system.

ENDURANCE

10/1979, C. and S. Taylor

SPEEDY

7/1980, Michael D. J. Lennon

1 VOSPER THORNYCROFT (VT2) TYPE

P 234

Operating weight, tons: 100 (all-up, starting)
Dimensions, feet (metres): 100·3 × 43·5 *(30·1 × 13·3)*
Main engines: 2 Rolls-Royce Proteus gas turbines (lift and propulsion); 4 250 shp = 45 knots
Endurance: 5 hours at max power with 10·5 tons fuel
Capacity: 130 troops or 23·5 tons installed armament

First chartered by MOD in 1976 and purchased 4 April 1979. Trials of the several possible tasks—patrol, MCM, logistic support, troop landings—carried out. In 1980 underwent refit for conversion to MCM role.

P 234

1978, Vosper Thornycroft Ltd

HOVERCRAFT AND HYDROFOIL

Note: The Royal Navy Hovercraft Trials Unit was established at Lee-on-the-Solent in 1974.

BOEING JETFOIL 929-115

SPEEDY P 296

Displacement, tons: 117
Dimensions, feet (metres): 90 × 30 × 17 (hullborne), 8 (foilborne) *(27·4 × 9·1 × 5·2, 2·4)* (foils extended); 101 × 30 × 6 *(30·8 × 9·1 × 1·8)* (foils retracted)
Main engines: 2 Allison 501-KF gas turbines; 6 600 shp; (foilborne); 2 Detroit 8V-92T1 diesels; 1 100 shp (hullborne)
Speed, knots: 43 (foilborne)
Range, miles: 600 (foilborne); 1 500 (diesel)
Complement: 18 (5 officers, 13 men)

Ordered 30 June 1978 from Boeing for evaluation in the offshore protection role. Launched 9 July 1979. Arrived at Vosper Thornycroft Ltd in November 1979 for fitting out. Commissioned 14 June 1980.

1 SR.N6 Mk 1 and 2 SR.N6 Mk 2

P 236, 237, 238

Operating weight, tons: 10 normal gross weight
Dimensions, feet (metres): 60·7 × 25·3 *(18·5 × 7·7)*
Main engine: 1 Rolls-Royce Gnome 1301 gas turbine; 1 400 shp = 50 knots
Range, miles: 200

Two deployed to Hong Kong in 1979—P 236 and 237.

SR.N6 (Hong Kong) *1979, MOD (Sgt. T. Chance, RAF)*

1 BH.7 TYPE

P 235

Operating weight, tons: 55
Dimensions, feet (metres): 78·3 × 45·5 × 34·0 oa (height); 5·5 (skirt) *(23·9 × 13·9 × 10·4; 1·7)*
Main engine: 1 Rolls-Royce Proteus 15M541 gas turbine; 4 250 shp = 58 knots
Endurance: 8 hours at max power with 8 tons fuel
Capacity: 60 troops or 7 tons installed armament
Complement: 14

Costing about £700 000, delivered to the Inter-Service Hovercraft Trials Unit at the Royal Naval Air Station, Lee-on-Solent, in April 1970. She could be used as a missile armed fast patrol craft, an amphibious assault craft or for MCM tasks.

P 235 *6/1980, J. L. M. van der Burg*

DIVING SUPPORT SHIPS

Name	*No.*	*Builder*	*Commissioned*
SEAFORTH CLANSMAN	—	Cochranes, Selby, N. Yorks	1977

Measurement, tons: 1977 gross; 577 net; 1 180 deadweight
Dimensions, feet (metres): 257·8 × 46·2 × 16·4 *(78·6 × 14·1 × 5)*
Main engines: Four 12-cyl Mirrlees diesels; 7 320 bhp; 2 cp propellers = 13 knots

Built for Seaforth Maritime Ltd, Aberdeen. Taken over for the RFA on charter 1978, for one year with option for extensions. Based at Aberdeen with naval diving party. With main engines forward she is fitted as a diving support ship with a stern ramp, moonpool, anti-pollution gear, fire-fighting gear and bow-thruster.

SEAFORTH CLANSMAN *8/1980, L. and L. van Ginderen*

0 + 1 SEABED OPERATIONS VESSEL

Name	*No.*	*Builder*	*Commissioned*
CHALLENGER	—	Scotts, Greenock	1982

Displacement, tons: 7 200
Dimensions, feet (metres): 440 × 59 × 18 *(134·1 × 18 × 5·5)*
Main engines: Diesel-electric; 5 Ruston 16 RKC2 diesels; 6 200 hp; Voith-Schneider propulsion = 15 knots; 3 bow thrusters
Complement: 185

Ordered 9 October 1979 after design contract of June 1977. Launched mid-1981. To carry a submersible for stern-launching, diving bell or submerged recompression chamber lowered from well amidships with a second well and crane for recovering submerged objects. Dynamic positioning system.

Cost: £80 million (1980).

Sonar: Plessey Type 193M.

LIGHT FORCES

Notes: (a) See Fleet Tenders section for "Alert" patrol craft.
(b) *Laleston* (Minewarfare section) classified as Coastal Patrol craft.

0 + 2 OFFSHORE PATROL VESSELS Mk 2

Name	*No.*	*Builders*	*Commissioned*
LEEDS CASTLE	—	Hall Russell & Co Ltd	Oct 1981
DUMBARTON CASTLE	—	Hall Russell & Co Ltd	Jan 1982

Displacement, tons: 1 427
Dimensions, feet (metres): 265·7 × 37·7 × 11·2 *(81 × 11·5 × 3·4)*
Main engines: 2 Ruston 12RKCM diesels; 5 640 bhp = 20 knots
Range, miles: 10 000 at 12 knots
Complement: 50 (plus austerity accommodation for 25 Royal Marines)

Ordered from Hall Russell and Co Ltd, Aberdeen in 1980. Cost £10 million each. *Leeds Castle* laid down November 1979, launched October 1980. *Dumbarton Castle* launched May 1981. Design includes an ability to lay mines in war.

Aircraft: Helicopter landing deck with refuelling facilities for Sea King.

LEEDS CASTLE *10/1980, Hall Russell*

7 "ISLAND" CLASS (OFFSHORE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
ANGLESEY	P 277	Hall Russell & Co Ltd	1 June 1979
ALDERNEY	P 278	Hall Russell & Co Ltd	6 Oct 1979
JERSEY	P 295	Hall Russell & Co Ltd	15 Oct 1976
GUERNSEY	P 297	Hall Russell & Co Ltd	28 Oct 1977
SHETLAND	P 298	Hall Russell & Co Ltd	14 July 1977
ORKNEY	P 299	Hall Russell & Co Ltd	25 Feb 1977
LINDISFARNE	P 300	Hall Russell & Co Ltd	3 Mar 1978

Displacement, tons: 925 standard; 1 260 full load
Dimensions, feet (metres): 176 wl; 195·3 oa × 36 × 14 *(53·7; 59·6 × 11 × 4·3)*
Gun: 1—40 mm Mk 3
Main engines: 2 Ruston 12 cyl diesels; 1 shaft; 4 380 hp = 16 knots
Range, miles: 11 000 at 12 knots
Complement: 35 (5 officers, 30 men) (accommodation for 40)

Order for first five announced 11 February 1975. Order placed 2 July 1975. *Jersey* launched 18 March 1976, *Orkney* 29 June 1976, *Shetland* 22 October 1976 *Guernsey* 17 February 1977 and *Lindisfarne* 1 June 1977. Can carry small RM detachment. Have three 160 kW generators.
Two more of class ordered 21 October 1977. *Anglesey* laid down 6 February 1978, launched 18 October 1978—*Alderney* 11 June 1978, 27 February 1979.
The earlier ships of this class were retrofitted and the remainder built with enlarged bilge keels to damp down their motion in heavy weather. Last pair fitted with stabilisers.

Cost: For *Jersey* and *Orkney* building cost £3·3 million, *Alderney* £3·9 million. Running cost £0·5 million per ship per year at 1976 prices.

Radar: Type 1006.

LINDISFARNE *4/1980, Michael D. J. Lennon*

3 FAST TRAINING BOATS

Name	*No.*	*Builders*	*Commissioned*
SCIMITAR	P 271	Vosper Thornycroft Group, Porchester Shipyard	19 July 1970
CUTLASS	P 274	Vosper Thornycroft Group, Porchester Shipyard	12 Nov 1970
SABRE	P 275	Vosper Thornycroft Group, Porchester Shipyard	5 Mar 1971

Displacement, tons: 102 full load
Dimensions, feet (metres): 100 × 26·6 × 6·4 *(30·5 × 8·1 × 1·9)*
Main engines: 2 Rolls-Royce Proteus gas turbines; 9 000 hp = 40 knots (2 Foden 375 hp diesels for cruising in CODOG arrangement)
Range, miles: 425 at 35 knots; 1 500 at 11·5 knots
Complement: 12 (2 officers, 10 ratings)

Hull of glued laminated wood construction. Design developed from that of "Brave" class fast patrol boats. Design permits fitting of third gas-turbine and light missiles if required. Launch dates:— *Cutlass* 19 February 1970, *Sabre* 21 April 1970, *Scimitar* 4 December 1969. Training craft at Portland. *Scimitar* deployed to Hong Kong 1979-81—two machine guns mounted.

SCIMITAR *8/1980, Dr. Giorgio Arra*

4 "BIRD" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
KINGFISHER	P 260	R. Dunston Ltd, Hessle	8 Oct 1975
CYGNET	P 261	R. Dunston Ltd, Hessle	8 July 1976
PETEREL	P 262	R. Dunston Ltd, Hessle	7 Feb 1977
SANDPIPER	P 263	R. Dunston Ltd, Hessle	16 Sep 1977

Displacement, tons: 194 full load
Dimensions, feet (metres): 120 × 21·7 × 6·5 *(36·6 × 6·6 × 2)*
Guns: 1—40 mm; 2 MGs
Main engines: 2 Paxman 16YJCM diesels; 4 200 bhp = 18 knots
Oil fuel, tons: 35
Range, miles: 2 000 at 14 knots
Complement: 19 (3 officers, 16 ratings)

Based on the smaller "Seal" class RAF rescue launches with some improvement to sea-keeping qualities and fitted with stabilisers. *Kingfisher* launched 20 September 1974. *Cygnet* 6 October 1975. *Peterel* 14 May 1976. *Sandpiper* 20 January 1977.

Cost: Average cost for building £1·1 million each. *Sandpiper* cost £1·4 million.

Design: Comparison of later craft with *Kingfisher* shows an expected attempt to cut down topweight eg radar cross-trees, deletion of scuttles.

Duties: *Kingfisher* and *Cygnet* attached to MCM Rosyth having been found unsuitable for Fishery Protection and deployed off Northern Ireland; *Peterel* and *Sandpiper* fitted with enclosed bridges for training duties at RN College, Dartmouth.

KINGFISHER *1980, L. and L. van Ginderen*

5 "MODIFIED TON" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
BEACHAMPTON	P 1007 (ex-M 1107)	Goole S.B. Co	1953
MONKTON	P 1055 (ex-M 1155)	Herd & Mackenzie, Buckie	1956
WASPERTON	P 1089 (ex-M 1189)	J. Samuel White & Co Ltd	1956
WOLVERTON	P 1093 (ex-M 1193)	Montrose S.Y. Co	1957
YARNTON	P 1096 (ex-M 1196)	Pickersgill	1956

Displacement, tons: 360 standard; 440 full load
Dimensions, feet (metres): 153 × 27·7 × 8·2 *(46·3 × 8·5 × 2·5)*
Guns: 2—40 mm Bofors (single, 1 fwd, 1 aft)
Main engines: 2 diesels; 2 shafts; 3 000 bhp = 15 knots
Oil fuel, tons: 45
Range, miles: 2 300 at 13 knots
Complement: 30 (5 officers and 25 ratings, but varies)

Former coastal minesweepers of the "Ton" class, refitted at the end of 1971, re-designated as coastal patrol vessels with limited wire-sweeping capability. Fitted with limited armour in bridge area. Form 6th Patrol Squadron Hong Kong.

YARNTON (Hong Kong) *8/1980, Dr. Giorgio Arra*

2 "FORD" CLASS (LARGE PATROL CRAFT)

Name	*No.*	*Builders*	*Commissioned*
DEE (ex-*Beckford*)	P 3104	Wm. Simons, Renfrew	1953
DROXFORD	P 3113	Pimblott, Northwich	1954

Displacement, tons: 120 standard; 142 full load
Dimensions, feet (metres): 117·2 × 20 × 6·6 *(35·7 × 6·1 × 2)*
A/S weapons: DC rails; large and small DC
Main engines: Davey Paxman diesels. Foden engine on centre shaft. 1 100 bhp = 18 knots
Oil fuel, tons: 23
Complement: 19

Built in 1953-57. Last survivors of a class of 20. *Dee* attached to Liverpool University RNU (administered by RNR Mersey) and *Droxford* to Glasgow University RNU (administered by RNR Clyde). *Dee* renamed 1965, this name having been used for *Droxford* 1955-65.

DEE *3/1980, L. and L. van Ginderen*

SURVEY SHIPS

Note: In 1974 the Minister of State for Defence set up the Hydrographic Studies Group which reported on 27 March 1975. Among the recommendations made by this group was an increase of the Royal Navy's Hydrographic Service by four coastal survey ships between 1979-81 and three inshore survey craft between 1978-79. This year (1981) the only change in this service has been a reduction of one inshore survey craft and the promise of an additional coastal survey ship in the future. With unstable areas in the southern North Sea/Channel area, the planned introduction of Trident submarines and increasing off-shore exploration the UK is now seriously deficient in its hydrographic surveying capabilities.

1 "IMPROVED HECLA" CLASS

Name	*No.*	*Builders*	*Commissioned*
HERALD	A 138	Robb Caledon, Leith	31 Oct 1974

Displacement, tons: 2 000 standard; 2 945 full load
Dimensions, feet (metres): 260·1 × 49·1 × 15·6 *(79·3 × 15 × 4·7)*
Aircraft: 1 Wasp helicopter
Main engines: Diesel-electric drive; 1 shaft; 3 Paxman 12 YJCZ diesels; 2 434 hp; 1 electric motor; 2 000 shp
Speed, knots: 14
Range, miles: 12 000 at 11 knots
Complement: 128

A later version of the "Hecla" class design. Fitted with Hydroplot Satellite navigation system, computerised data logging, gravimeter, magnetometer, sonars, echo-sounders, coring and oceanographic winches, passive stabilisation tank, bow thruster and two 35 ft surveying motor-boats. Has a five bladed, 130 rpm propeller.
Laid down 9 November 1972. Launched by Mrs Mary Hall, wife of the Hydrographer, on 4 October 1973.

Cost: £5·2 million building cost.

HERALD *8/1979, J. L. M. van der Burg*

3 "HECLA" CLASS

Name	*No.*	*Builders*	*Commissioned*
HECLA	A 133	Yarrow & Co, Blythswood	9 Sep 1965
HECATE	A 137	Yarrow & Co Ltd, Scotstoun	20 Dec 1965
HYDRA	A 144	Yarrow & Co, Blythswood	5 May 1966

Displacement, tons: 1 915 light; 2 733 full load
Measurement, tons: 2 898 gross
Dimensions, feet (metres): 260·1 × 49·1 × 15·6 *(79·3 × 15 × 4·7)*
Aircraft: 1 Wasp helicopter
Main engines: Diesel-electric drive; 1 shaft; 3 Paxman Ventura 12-cyl Vee turbocharged diesels; 3 840 bhp; 1 electric motor; 2 000 shp
Speed, knots: 14
Oil fuel, tons: 450
Range, miles: 12 000 at 11 knots
Complement: 127

The first Royal Navy ships to be designed with a combined oceanographical and hydrographic role. Of merchant ship design and similar in many respects to the Royal Research ship *Discovery*. The hull is strengthened for navigation in ice, and a bow thruster is fitted. The fore end of the superstructure incorporates a Land Rover garage and the after end a helicopter hangar with adjacent flight deck. Equipped with chartroom, drawing office and photographic studio; two laboratories, dry and wet; electrical, engineering and shipwright workshops, large storerooms and two surveying motor-boats. Air-conditioned throughout.
Average cost £1·25 million. *Hecate* laid down 26 October 1964, launched 31 March 1965. *Hecla*; 6 May 1964, 21 December 1964; *Hydra* 14 May 1964, 14 July 1965.

HYDRA *7/1980, L. and L. van Ginderen*

COASTAL SURVEY SHIPS

4 "BULLDOG" CLASS

Name	*No.*	*Builders*	*Commissioned*
BULLDOG	A 317	Brooke Marine Ltd, Lowestoft	21 Mar 1968
BEAGLE	A 319	Brooke Marine Ltd, Lowestoft	9 May 1968
FOX	A 320	Brooke Marine Ltd, Lowestoft	11 July 1968
FAWN	A 335	Brooke Marine Ltd, Lowestoft	10 Sep 1968

Displacement, tons: 800 standard; 1 088 full load
Dimensions, feet (metres): 189 × 36·8 × 12 *(57·6 × 11·2 × 3·7)*
Guns: Fitted for 2—20 mm
Main engines: 4 Lister-Blackstone ERS8M, 8-cyl, 4 stroke diesels, coupled to 2 shafts; cp propellers; 2 640 bhp = 15 knots
Range, miles: 4 500 at 12 knots
Complement: 39 (5 officers, 34 ratings)

Originally designed for duty overseas, working in pairs although normally now employed in home waters. Launch dates: *Bulldog* on 12 July 1967, *Beagle* on 7 September 1967, *Fox* on 6 November 1967 and *Fawn* on 29 February 1968. Built to commercial standards. Fitted with passive tank stabilizer, precision ranging radar, Decca "Hifix" system, automatic steering. Air-conditioned throughout. Carry surveying motor-boat.

BEAGLE *2/1981, Michael D. J. Lennon*

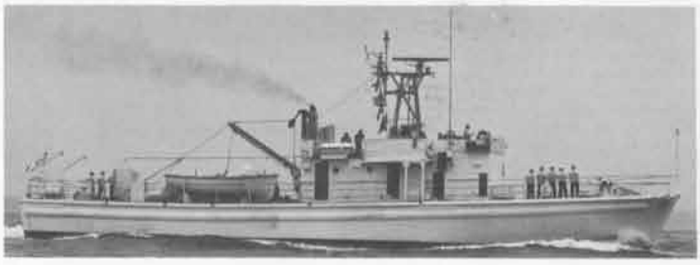
INSHORE SURVEY CRAFT

3 "E" CLASS

Name	*No.*	*Builders*	*Commissioned*
ECHO	A 70	J. Samuel White & Co Ltd, Cowes	12 Sep 1958
ENTERPRISE	A 71	M. W. Blackmore & Sons Ltd, Bideford	1959
EGERIA	A 72	Wm. Weatherhead & Sons Ltd, Cockenzie	1959

Displacement, tons: 120 standard; 160 full load
Dimensions, feet (metres): 106·8 × 22 × 6·8 *(32·6 × 6·7 × 2·1)*
Gun: Fitted for 1—40 mm
Main engines: 2 Paxman diesels; 2 shafts; cp propellers; 1 400 bhp = 14 knots
Oil fuel, tons: 15
Range, miles: 1 600 at 10 knots
Complement: 18 (2 officers, 16 ratings); accommodation for 22 (4 officers, 18 ratings)

Built to same design as "Ham" class MSIs.
Echo, the first inshore survey craft, was launched on 1 May 1957. Equipped with two echo sounding machines, sonar, radar, wire sweep gear and surveying motor boat.



EGERIA *6/1977, Michael D. J. Lennon*

2 "HAM" CLASS

Name	*No.*	*Builders*	*Commissioned*
WATERWITCH (ex-*Powderham*)	M 2720	J. Samuel White & Co Ltd, Cowes	1959
WOODLARK (ex-*Yaxham*)	M 2780	J. Samuel White & Co Ltd, Cowes	1958

Displacement, tons: 120 standard; 160 full load
Dimensions, feet (metres): 106·5 × 21·2 × 5·5 *(32·5 × 6·5 × 1·7)*
Main engines: Diesels; 2 shafts; 1 100 bhp = 14 knots
Range, miles: 1 500 at 12 knots
Complement: 18 (2 officers, 16 ratings)

Former inshore minesweepers of the "Ham" class converted for surveying in inshore waters at home. *Waterwitch* is RMAS manned and due for transfer to the Disposal List in 1981. *Woodlark*, although retaining hydrographic capabilities, is now attached to Southampton University RNU.

WATERWITCH *7/1980, L. and L. van Ginderen*

ROYAL FLEET AUXILIARY SERVICE

Notes: (a) Many of large RFAs carry two boxed 40 mm guns.
(b) In 1978 it was announced that after the departure of *Ark Royal* the seagoing air strength of the RN would be augmented by putting at least four Sea Kings in all large RFAs. A RN air detachment will be with each flight.

Commodore, RFA: Commodore S. C. Dunlop, MBE

LARGE FLEET TANKERS (AOF(L))

3 "OL" CLASS

Name	*No.*	*Builders*	*Commissioned*
OLWEN (ex-*Olynthus*)	A 122	Hawthorn Leslie, Hebburn	21 June 1965
OLNA	A 123	Hawthorn Leslie, Hebburn	1 Apr 1966
OLMEDA (ex-*Oleander*)	A 124	Swan Hunter, Wallsend	18 Oct 1965

Displacement, tons: 10 890 light; 36 000 full load
Measurement, tons: 25 100 deadweight; 18 600 gross
Dimensions, feet (metres): 648 × 84 × 36·4 *(197·5 × 25·6 × 11·1)*
Aircraft: 4 Sea King helicopters
Main engines: Pametrada double reduction geared turbines; 26 500 shp = 19 knots
Boilers: 2 Babcock & Wilcox; 750 psi; 950°F
Complement: 87 (25 officers and 62 ratings)

Largest and fastest ships when they joined the Royal Fleet Auxiliary Service. *Olmeda* was launched on 19 November 1964, while *Olna* and *Olwen* were launched on 28 July 1965 and 10 July 1964, respectively.
Designed for underway replenishment of the Fleet both alongside astern (fuel only) or by helicopter. Specially strengthened for operations in ice, fully air-conditioned. *Olna* has a transverse bow thrust unit for improved manoeuvrability in confined waters and a new design of replenishment-at-sea systems. In 1979 Sat. Nav. Com. system fitted in *Olmeda*.

Capacity: Original figures as follows; 18 400 tons FFO; 1 720 tons diesel; 130 tons lub oil; 3 730 tons Avcat; 280 tons Mogas. The proportions of FFO and diesel have now been changed.

Hangar: On port side of funnel can house three helicopters. On starboard side acts as garage for vehicles or for more helicopters.

OLMEDA *6/1980, Michael D. J. Lennon*

2 LATER "TIDE" CLASS

Name	*No.*	*Builders*	*Commissioned*
TIDESPRING	A 75	Hawthorn Leslie, Hebburn	18 Jan 1963
TIDEPOOL	A 76	Hawthorn Leslie, Hebburn	28 June 1963

Displacement, tons: 8 531 light; 27 400 full load
Measurement, tons: 18 900 deadweight; 14 130 gross
Dimensions, feet (metres): 583 × 71 × 32 *(177·6 × 21·6 × 9·8)*
Aircraft: 4 Sea King helicopters
Main engines: Double reduction geared turbines; 15 000 shp = 18·3 knots
Boilers: 2 Babcock & Wilcox
Complement: 110 (30 officers and 80 ratings)

Highly specialised ships for fuelling (13 000 tons cargo fuel) and storing naval vessels at sea. *Tidespring* was laid down on 24 July 1961, launched on 3 May 1962. *Tidepool* was laid down on 4 December 1961, launched on 11 December 1962.

Hangar: On port side of funnel can house three helicopters. On starboard side acts as garage for vehicles or for three more helicopters.

TIDESPRING *9/1980, L. and L. van Ginderen*

2 + (1) "APPLELEAF" CLASS

Name	*No.*	*Builders*	*Commissioned*
APPLELEAF (ex-*Hudson Deep*)	A 79	Cammell Laird & Co Ltd, Birkenhead	1979
BRAMBLELEAF (ex-*Hudson Cavalier*)	A 81	Cammell Laird & Co Ltd, Birkenhead	1979
—	—	Cammell Laird & Co Ltd, Birkenhead	—

Displacement, tons: 40 200 full load
Measurement, tons: 19 976 gross; 13 642 net; 33 000 deadweight
Dimensions, feet (metres): 560 × 85 × 38·9 *(170·7 × 25·9 × 11·9)*
Main engines: Two 14-cyl Pielstick diesels; 14 000 bhp; 1 shaft = 15·5 knots

Chartered in 1979-80 to replace *Orangeleaf* (ex-*Southern Satellite*) and *Cherryleaf* (ex-*Overseas Adventurer*) returned to their owners, former in May 1978 and subsequently scrapped, the latter in April 1979. Both converted, *Brambleleaf* (launched 22 January 1976) at Cammell Lairds and *Appleleaf* (launched 24 July 1975) at Wallsend Dry Docks completing autumn 1979. They were of a four-ship order cancelled by Hudson Fuel and Shipping Co but these two were completed by the shipbuilders, being the only mercantile order then in hand.
A further ship of this class is to be built under commercial contract to be chartered by MOD.

BRAMBLELEAF *1/1981, L. and L. van Ginderen*

SMALL FLEET TANKERS (AOF(S))

5 "ROVER" CLASS

Name	*No.*	*Builders*	*Commissioned*
GREEN ROVER	A 268	Swan Hunter, Hebburn-on-Tyne	15 Aug 1969
GREY ROVER	A 269	Swan Hunter, Hebburn-on-Tyne	10 Apr 1970
BLUE ROVER	A 270	Swan Hunter, Hebburn-on-Tyne	15 July 1970
GOLD ROVER	A 271	Swan Hunter, Wallsend-on-Tyne	22 Mar 1974
BLACK ROVER	A 273	Swan Hunter, Wallsend-on-Tyne	23 Aug 1974

Displacement, tons: 4,700 light; 11 522 full load
Measurement, tons: 6 692 (A 271 and 273), 6 822 (remainder) deadweight; 7 510 gross; 3 185 net
Dimensions, feet (metres): 461 × 63 × 24 *(140·6 × 19·2 × 7·3)*
Aircraft: 1 Sea King helicopter
Main engines: 2 Pielstick 16-cyl diesels; 1 shaft; cp propeller; 15 360 bhp = 19 knots
Oil fuel: 950 tons
Range, miles: 15 000 at 15 knots
Complement: 47 (16 officers and 31 men)

Small fleet tankers designed to replenish HM ships at sea with fuel, fresh water, limited dry cargo and refrigerated stores under all conditions while underway. A helicopter landing platform is provided served by a stores lift, to enable stores to be transferred at sea by "vertical lift". *Green Rover* was launched on 19 December 1968, *Grey Rover* on 17 April 1969, *Blue Rover* on 11 November 1969. *Gold Rover* on 7 March 1973 and *Black Rover* on 30 October 1973. Cargo capacity 6 600 tons fuel with varying proportions of FFO, Dieso, Avcat, Avtur, Gasoline and Lub oil.

Cost: *Gold Rover* cost £7·7 million, an increase of £4·7 million over *Green Rover*. Running costs at 1976 prices £1 million per ship per year.

Engineering: A 268-270 re-engined 1973-74.

Training: *Gold Rover* employed on training duties at Portland.

GOLD ROVER *7/1980, Wright and Logan*

SUPPORT TANKERS (AOS)

Name	No.	Builders	Commissioned
PEARLEAF	A 77	Blythswood Shipbuilding Co Ltd, Scotstoun	Jan 1960

Displacement, tons: 25 790 full load
Measurement, tons: 18 711 deadweight; 12 353 gross; 7 215 net
Dimensions, feet (metres): 568 × 71·7 × 30 *(173·2 × 21·9 × 9·2)*
Main engine: 1 Rowan Doxford 6-cyl diesel; 8 800 bhp = 16 knots
Complement: 55

Chartered from Jacobs and Partners Ltd, London on completion. Launched on 15 October 1959. Can carry three different grades of cargo. Astern and abeam fuelling.

PEARLEAF *7/1979, L. and L. van Ginderen*

Name	No.	Builders	Commissioned
PLUMLEAF	A 78	Blyth D.D. & Eng Co Ltd	July 1960

Displacement, tons: 26 480 full load
Measurement, tons: 19 430 deadweight; 12 459 gross
Dimensions, feet (metres): 560 × 72 × 30 *(170·8 × 22 × 9·2)*
Main engine: 1 N.E. Doxford 6-cyl diesel; 9 500 bhp = 15·5 knots
Complement: 55

Launched 29 March 1960. Astern and abeam fuelling.

PLUMLEAF *5/1979, Wright and Logan*

COASTAL TANKER (AO(H))

1 "EDDY" CLASS

Name	No.	Builders	Commissioned
EDDYFIRTH	A 261	Lobnitz & Co Ltd, Renfrew	10 Feb 1954

Displacement, tons: 1 960 light; 4 160 full load
Measurement, tons: 2 200 deadweight; 2 222 gross
Dimensions, feet (metres): 286 × 44 × 17·2 *(87·2 × 13·4 × 5·2)*
Main engines: 1 set triple expansion; 1 shaft; 1 750 ihp = 12 knots
Boilers: 2 oil burning cylindrical

The last of a class of eight, all completed 1952-54. Cargo capacity: 1 650 tons oil.

Approved for disposal later in 1981.

EDDYFIRTH *7/1980, L. and L. van Ginderen*

FLEET REPLENISHMENT SHIPS (AEFS)

Name	No.	Builders	Commissioned
FORT GRANGE	A 385	Scott-Lithgow, Greenock	6 Apr 1978
FORT AUSTIN	A 386	Scott-Lithgow, Greenock	11 May 1979

Displacement, tons: 23 600 full load
Measurement, tonnes: 8 160 deadweight
Dimensions, feet (metres): 603 × 79 × 29·5 *(183·9 × 24·1 × 9)*
Aircraft: 4 Sea King helicopters (carry only 1 in peacetime)
Main engine: 1—8-cyl 8RND90 Sulzer diesel; 23 200 bhp; 1 shaft = 22 knots
Range, miles: 10 000 at 20 knots
Complement: 140 RFA, 36 RN (aircraft detachment), 45 RNSTS (civilian supply staff) (accommodation for 288)

Ordered in November 1971. Fitted with a helicopter flight-deck and hangar, thus allowing not only for vertical replenishment but also a base for Force A/S helicopters. *Fort Grange* laid down 9 November 1973, launched 9 December 1976. *Fort Austin* laid down 9 December 1975, launched 9 March 1978, started sea trials November 1978. A/S stores for helicopters carried on board.
Carry three 10 ton cranes and three 5 ton cranes. Store capacity 3 500 tons of armament, naval and victualling stores in four holds of 12 800 m³.

Corvus: Two octuple launchers fitted on upper bridge.

Engineering: Bow thruster fitted.

FORT GRANGE *5/1980, Michael D. J. Lennon*

Name	No.	Builders	Commissioned
RESOURCE	A 480	Scotts Shipbuilding & Eng Co, Greenock	16 May 1967
REGENT	A 486	Harland & Wolff, Belfast	6 June 1967

Displacement, tons: 22 890 full load
Measurements, tons: 18 029 gross
Dimensions, feet (metres): 640 × 77·2 × 26·1 *(195·1 × 23·5 × 8)*
Aircraft: 4 Sea King helicopters (carry only 2 in peacetime)
Guns: Fitted for 2—40 mm Bofors (single) which are not carried in peacetime
Main engines: AEI steam turbines; 20 000 shp = 21 knots
Boilers: Two
Complement: 119 RFA officers and ratings; 52 Naval Dept industrial and non-industrial civil servants; RN detachment for helicopter flying and maintenance

Ordered on 24 January 1963. They have lifts for armaments and stores, and helicopter platforms for transferring loads at sea. Designed from the outset as Fleet Replenishment Ships (previous ships had been converted merchant vessels). Air-conditioned. *Resource* was launched at Greenock on 11 February 1966, *Regent* at Belfast on 9 March 1966. Official title is Ammunition, Explosives, Food, Stores Ship (AEFS).

REGENT *3/1980, Michael D. J. Lennon*

STORES SUPPORT SHIPS (AVS/AFS)

Name	No.	Builders	Commissioned
STROMNESS	A 344	Swan Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	21 Mar 1967
TARBATNESS	A 345	Swan Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	10 Aug 1967

Displacement, tons: 9,010 light; 16 792 full load (14 000 normal operating)
Measurement, tons: 7 782 deadweight; 12 359 gross; 4 744 net
Dimensions, feet (metres): 524 × 72 × 22 *(159·7 × 22 × 6·7)*
Aircraft: 1 Sea King helicopter
Main engine: 1 Wallsend-Sulzer 8-cyl RD.76 diesel; 11 520 bhp = 18 knots
Range, miles: 12 000 at 16 knots
Complement: 151 (25 officers, 82 ratings, 44 stores personnel)

Lifts and mobile appliances provided for handling stores internally, and a new replenishment at sea system and a helicopter landing platform for transferring loads at sea. A novel feature of the ships is the use of closed-circuit television to monitor the movement of stores. All air-conditioned. *Stromness* launched on 16 September 1966, *Tarbatness* on 22 February 1967. The conversion of *Tarbatness* to an amphibious transport has been cancelled. Now in reserve at Gibraltar.

Cost: Running cost, at 1976 prices, £1·6 million per ship per year.

Transfer: *Lyness* transferred to US Navy on bare-boat charter in November 1980 with option to purchase. Renamed *Sirius*. *Tarbatness* may also be transferred to US Navy.

TARBATNESS *5/1979, Leo van Ginderen*

STORE CARRIER (AK)

Name	No.	Builders	Commissioned
BACCHUS	A 404	Henry Robb Ltd, Leith	Sep 1962

Displacement, tons: 2 740 light; 8 173 full load
Measurement, tons: 5 312 deadweight; 4 823 gross; 2 441 net
Dimensions, feet (metres): 379 × 55 × 22 *(115·6 × 16·8 × 6·7)*
Main engine: Swan Hunter 5-cyl Sulzer diesel; 1 shaft; 5 500 bhp = 15 knots
Oil fuel, tons: 720
Complement: 57

Built for the British India Steam Navigation Co for charter to the Royal Navy on completion. Crew accommodation and engines aft as in tankers. Purchased in 1973 by P & O SN Co, remaining on charter to MOD (N). Boxed 40 mm guns carried on board. Retained to support amphibious operations until disposal later in 1981. Sister ship *Hebe* sold 1979.

BACCHUS *6/1979, Wright and Logan*

ROYAL MARITIME AUXILIARY SERVICE

Notes: (a) The Royal Maritime Auxiliary Service and Port Auxiliary Service were combined as RMAS on 1 October 1976.
(b) To avoid over complication the ships and vessels of the Royal Naval Auxiliary Service and some of the Royal Corps of Transport are included here.

MOORING, SALVAGE AND BOOM VESSELS

Note: *Scarab* ("Insect" class tender) with bow sheave acts as mooring vessel at Pembroke Dock. *Cricket* (no bow sheave) acts as mooring vessel in the Clyde.

2 "WILD DUCK" CLASS (A)

2 "IMPROVED WILD DUCK" CLASS (B)

2 "LATER WILD DUCK" CLASS (C)

Name		No.	Builders	Commissioned
MANDARIN	}	P 192	Cammell Laird & Co Ltd, Birkenhead	5 Mar 1964
PINTAIL	} A	P 193	Cammell Laird & Co Ltd, Birkenhead	Mar 1964
GARGANEY	}	P 194	Brooke Marine Ltd, Lowestoft	20 Sep 1966
GOLDENEYE	} B	P 195	Brooke Marine Ltd, Lowestoft	21 Dec 1966
GOOSANDER	}	A 164	Robb Caledon Ltd	10 Sep 1973
POCHARD	} C	A 165	Robb Caledon Ltd	11 Dec 1973

Displacement, tons: (A) 750 light; 1 200 full load. (B) 850 light; 1 300 full load. (C) 941 light; 1 622 full load
Dimensions, feet (metres): (A) 181·8 × 36·6 × 12 *(55·4 × 11·2 × 3·7)*. (B) 189·8 × 36·6 × 13 *(57·9 × 11·2 × 4)*. (C) 197·6 × 40·1 × 13·8 *(60·2 × 12·2 × 4·2)*
Main engine: 1 Davey Paxman 16-cyl diesel; 1 shaft; cp propeller; 550 bhp (A and B); 750 bhp (C)
Speed, knots: 10 (A and B); 10·8 (C)
Range, miles: 3 260 at 9·5 knots (C); 3 000 at 10 knots (A and B)
Complement: 26

Mandarin was the first of a new class of marine service vessels. Launched on 17 September 1963. *Pintail* was launched on 3 December 1963. *Garganey* and *Goldeneye* were built in 1965-67. *Goosander* and *Pochard* of the later "Later Wild Duck" class were launched 12 April 1973 and 21 June 1973 respectively. Previously their three tasks were separately undertaken by specialist vessels. Capable of laying out and servicing the heaviest moorings used by the Fleet and also maintaining booms for harbour defence. Heavy lifting equipment enables a wide range of salvage operations to be performed, especially in harbour clearance work. The special heavy winches have an ability for tidal lifts over the apron of 200 tons. Boxed 40 mm guns carried on board. Extra accommodation for divers fitted by main-mast in *Pintail* at last refit.

PINTAIL *8/1980, Michael D. J. Lennon*

4 "KIN" CLASS

Name	No.	Builders	Commissioned
KINGARTH	A 232	A. Hall, Aberdeen	1944
KINBRACE	A 281	A. Hall, Aberdeen	1945
KINLOSS	A 482	A. Hall, Aberdeen	1945
UPLIFTER	A 507	Smith's Dock Co Ltd	1944

Displacement, tons: 950 standard; 1 050 full load
Measurement, tons: 262 deadweight; 775 gross
Dimensions, feet (metres): 179·2 × 35·2 × 12 *(54·8 × 10·7 × 3·7)*
Main engine: 1 British Polar Atlas M44M diesel; 630 bhp = 9 knots
Complement: 34

Originally a class of eight classified as Coastal Salvage Vessels, but re-rated Mooring, Salvage and Boom Vessels in 1971. Equipped with horns and heavy rollers. Can lift 200 tons deadweight over the bow. *Kinbrace, Kingarth* and *Uplifter* were refitted with diesel engines in 1966-67, and *Kinloss* in 1963-64.

KINGARTH *11/1978, Michael D. J. Lennon*

COASTAL TANKERS

6 "OILPRESS" CLASS

Name	No.	Builders	Commissioned
OILPRESS	Y 21	Appledore Shipbuilders Ltd	1969
OILSTONE	Y 22	Appledore Shipbuilders Ltd	1969
OILWELL	Y 23	Appledore Shipbuilders Ltd	1969
OILFIELD	Y 24	Appledore Shipbuilders Ltd	1969
OILBIRD	Y 25	Appledore Shipbuilders Ltd	1969
OILMAN	Y 26	Appledore Shipbuilders Ltd	1969

Displacement, tons: 280 standard; 530 full load
Dimensions, feet (metres): 139·5 × 30 × 8·3 *(42·5 × 9 × 2·5)*
Main engine: 1 Lister-Blackstone ES6 diesel; 1 shaft; 405 shp at 900 rpm
Complement: 11 (4 officers and 7 ratings)

Ordered on 10 May 1967. Three are diesel oil carriers and three FFO carriers. Launched:— *Oilbird* 21 November 1968, *Oilfield* 5 September 1968, *Oilman* 18 February 1969, *Oilpress* 10 June 1968, *Oilstone* 11 July 1968, *Oilwell* 20 January 1969. Of 250 ton capacity.

OILFIELD *1/1981, Michael D. J. Lennon*

TRIALS SHIPS

Note: *Endsleigh* operates from Rosyth for AMTE (NCRE)

Name	*No.*	*Builders*	*Commissioned*
NEWTON	A 367	Scott Lithgow Ltd	17 June 1976

Displacement, tons: 3 940
Dimensions, feet (metres): 323·5 × 53 × 18·5 *(98·6 × 16 × 5·7)*
Main engines: Diesel-electric; 3 Mirrlees-Blackstone diesels; 4 350 bhp; 1 electric motor; 2 680 bhp = 14 knots
Range, miles: 5 000 at 14 knots
Complement: 64 (including 12 scientists)

Ordered November 1971. Laid down 19 December 1973. Launched 25 June 1975. Fitted with bow thruster and Kort nozzle. Propulsion system is very quiet. Passive tank stabilisation. Prime duty sonar propagation trials. Can serve as cable-layer with large cable tanks. Special winch system. Electric propulsion system by G.E.C.
Based at Plymouth.

NEWTON *2/1979, A. Denholm*

Name	*No.*	*Builders*	*Commissioned*
WHITEHEAD	A 364	Scotts Shipbuilding Co Ltd, Greenock	1971

Displacement, tons: 3 040 full load
Dimensions, feet (metres): 319 × 48 × 17 *(97·3 × 14·6 × 5·2)*
Torpedo tubes: 1—21 in (bow, submerged); 3 (1 triple) Mk 32 A/S mounting
Main engines: 2 Paxman 12 YLCM diesels; 1 shaft; 3 400 bhp = 15·5 knots
Range, miles: 4 000 at 12 knots
Complement: 10 officers, 32 ratings, 15 trials and scientific staff

Designed to provide mobile preparation, firing and control facilities for weapons and research vehicles. Launched on 5 May 1970. Named after Robert Whitehead, the torpedo development pioneer and engineer. Fitted with equipment for tracking weapons and target and for analysing the results of trials. Based at Plymouth.

WHITEHEAD *8/1979, Michael D. J. Lennon*

Name	*No.*	*Builders*	*Commissioned*
AURICULA	A 285	Ferguson Bros, Glasgow	6 Nov 1980

Displacement, tons: 1 100
Dimensions, feet (metres): 170·5 × 36 × 11·8 *(52 × 11 × 3·6)*
Main engines: 2 Mirrlees-Blackstone diesels; 2 shafts; 1 300 hp = 12 knots
Complement: 32 (7 officers, 15 men, 10 trials party)

Ordered 5 January 1978 as sonar trials and experimental ship. Laid down 16 February 1979, launched 22 November 1979. Replaced *Whimbrel*. Has bow thruster.

AURICULA *1/1981, Michael D. J. Lennon*

Name	*No.*	*Builders*	*Commissioned*
CRYSTAL	RDV 01	HM Dockyard, Devonport	30 Nov 1971

Displacement, tons: 3 040
Dimensions, feet (metres): 413·5 × 56 × 5·5 *(126·1 × 17·1 × 1·7)*
Complement: 60, including scientists

Unpowered floating platform for Sonar Research and Development. Ordered in December 1969. Launched 22 March 1971. A harbour-based laboratory without propulsion machinery or steering which provides the Admiralty Underwater Weapons Establishment at Portland with a stable platform on which to carry out acoustic tests and other research projects. Under dockyard control.

CRYSTAL *2/1980, C. and S. Taylor*

TORPEDO RECOVERY VESSELS

4 "TORNADO" CLASS

TORNADO A 140
TORCH A 141
TORMENTOR A 142
TOREADOR A 143

Displacement, tonnes: 698 full load
Dimensions, feet (metres): 131·2 × 30·2 × 10·8 *(40 × 9·2 × 3·3)*
Main engines: 2 Mirrlees-Blackstone ESL8 MGR diesels; 2 200 hp = 14 knots
Range, miles: 3 000 at 14 knots
Complement: 17

Ordered from Hall Russell, Aberdeen on 1 July 1977. Launch dates: *Tornado* 24 May 1979, *Torch* 7 August 1979, *Tormentor* 6 November 1979, *Toreador* 14 February 1980. *Tornado* accepted 15 November 1979, *Torch* 12 February 1980, *Tormentor* 29 April 1980 and *Toreador* 1 July 1980. *Torch* based at Portland.

TORCH *1/1981, Michael D. J. Lennon*

Name	*No.*	*Builders*	*Commissioned*
TORRENT	A 127	Cleland S.B. Co, Wallsend	10 Sep 1971
TORRID	A 128	Cleland S.B. Co, Wallsend	Jan 1972

Measurement, tons: 550 gross
Dimensions, feet (metres): 151 × 31·5 × 11 *(46·1 × 9·6 × 3·4)*
Main engines: Paxman diesels; 1 400 bhp = 12 knots
Complement: 19

Torrent was launched on 29 March 1971 and *Torrid* on 7 September 1971. These ships have a stern ramp for torpedo recovery—can carry 22 torpedoes in hold and ten on deck.
Torrent—Clyde. *Torrid*—Plymouth.

TORRID *8/1979, J. L. M. van der Burg*

Ex-RAF CRAFT

OSPREY (ex-RAF RTTL 2770) **L 72**

Two craft operating on the Clyde. For details see RAF section at end—*Osprey*, RTTL Mk 2 type; L 72, 1300 Series Pinnace type.

L 72 *7/1978, A. Denholm*

ENDEAVOUR A 213

Displacement, tons: 88
Dimensions, feet (metres): 76 × 14·5 × 9·8 *(23·2 × 4·4 × 3)*
Main engine: 1 Lister-Blackstone diesel; 337 hp; 1 shaft = 10·5 knots

Built for Liverpool Customs by R. Dunston & Co in 1966. Subsequently bought by MOD. Operates as TRV and range safety craft at Bincleaves Torpedo Range, Portland.

ENDEAVOUR *6/1980, Michael D. J. Lennon*

CABLE SHIP

Name	*No.*	*Builders*	*Commissioned*
ST. MARGARETS	A 259	Swan Hunter & Wigham Richardson Ltd	1944

Displacement, tons: 1 300 light; 2 500 full load
Measurement, tons: 1 524 gross; 1 200 deadweight
Dimensions, feet (metres): 252 × 36·5 × 16·3 *(77 × 11·1 × 5)*
Main engines: Triple expansion; 2 shafts; 1 250 ihp = 12 knots

Provision was made for mounting one 4-in gun and four 20 mm guns but no armament is fitted.

ST. MARGARETS *9/1980, Michael D. J. Lennon*

SUBMARINE TENDER

WAKEFUL (ex-*Dan*, ex-*Heracles*) A 236

Displacement, tons: 900 approx
Measurement, tons: 492 gross
Dimensions, feet (metres): 127·5 × 35 × 15·5 *(38·9 × 10·7 × 4·7)*
Main engines: 2—9-cyl Ruston diesels; 4 750 bhp
Complement: 18

Purchased from Sweden in 1974 at cost of £600 000. Built as a tug by Cochranes, Selby, N. Yorks and now operated as submarine target ship in the Clyde after undergoing a £1·6 million refit.

WAKEFUL *2/1979, Michael D. J. Lennon*

ARMAMENT STORE CARRIERS (AKF)

Name	*No.*	*Builders*	*Commissioned*
KINTERBURY	A 378	Appledore S.Y.	Nov 1980
THROSK	A 379	Cleland S.B. Co, Wallsend	20 Sep 1977

Displacement, tons: 1 968 full load
Measurement, tons: 1 150 deadweight
Dimensions, feet (metres): 231·2 × 39 × 15 *(70·5 × 11·9 × 4·6)*
Main engines: 2 Mirrlees-Blackstone diesels; 3 000 bhp; 1 shaft = 14 knots
Range, miles: 5 000 at 10 knots
Complement: 22 (plus 10 spare bunks)

Throsk ordered 9 December 1975. Laid down 25 August 1976, launched 31 March 1977. Carry armament stores in two holds. Two 5-tonne derricks. A third of this class *(St. George)* has been ordered for the RCT from Appledore S.Y. and a fourth for the Royal Navy from same yard. Order 2 October 1979. Internal arrangements of RCT ship differ from Royal Navy ships.

Appearance: While *Throsk* has a rectangular funnel that of *Kinterbury* is rounded. The latter, instead of *Throsk's* derrick forward has a small pole mast and a twin crane in the well-deck.

KINTERBURY *2/1981, Michael D. J. Lennon*

WATER CARRIERS

7 "WATER" CLASS

Name	*No.*	*Builders*	*Commissioned*
WATERFALL	Y 17	Drypool Engineering & Drydock Co, Hull	1967
WATERSHED	Y 18	Drypool Engineering & Drydock Co, Hull	1967
WATERSPOUT	Y 19	Drypool Engineering & Drydock Co, Hull	1967
WATERSIDE	Y 20	Drypool Engineering & Drydock Co, Hull	1968
WATERCOURSE	Y 30	Drypool Engineering & Drydock Co, Hull	1974
WATERFOWL	Y 31	Drypool Engineering & Drydock Co, Hull	25 May 1974
WATERMAN	A 146	R. Dunston (Hessle) Ltd	June 1978

Measurement, tons: 285 gross
Dimensions, feet (metres): 131·5 × 24·8 × 8 *(40·1 × 7·5 × 2·4)*
Main engine: 1 diesel; 1 shaft; 600 bhp = 11 knots
Complement: 11

Y 19-20 have after deck-house extended forward. *Waterman* ordered 3 February 1977, laid down 19 June 1977 and launched 24 November 1977. She is a modified ship, having a store-carrying capability and, like *Waterfowl*, has a deckhouse forward of the bridge.

WATERSHED *8/1980, Michael D. J. Lennon*

1 "FRESH" CLASS

FRESHBURN

Displacement, tons: 594
Dimensions, feet (metres): 126·2 × 25·5 × 10·8 *(38·5 × 7·8 × 3·3)*
Main engines: Triple expansion; 450 ihp = 9 knots

At Chatham. Last of a wartime class of 14.

TUGS

Note: Appearance of RMAS tugs—black hull with white line, buff upperworks, buff funnel with black top. The blue band on the funnel varies between ports.

3 OCEAN TUGS

Name	*No.*	*Builders*	*Commissioned*
ROYSTERER	A 361	C. D. Holmes, Beverley, Humberside	26 Apr 1972
ROLLICKER	A 502	C. D. Holmes, Beverley, Humberside	Feb 1973
ROBUST	A 366	C. D. Holmes, Beverley, Humberside	6 Apr 1974

Displacement, tons: 1 630 full load
Dimensions, feet (metres): 179·7 × 38·5 × 18 *(55 × 11·7 × 5·5)*
Main engines: 2 Mirrlees KMR 6 diesels; 2 shafts (cp propellers); 4 500 bhp at 525 rpm = 15 knots
Range, miles: 13 000 at 12 knots
Complement: 31 (10 officers and 21 ratings) (and able to carry salvage party of 10 RN officers and ratings)

Bollard pull—50 tons. Designed principally for salvage and long-range towage but can be used for general harbour duties, which *Robust* now undertakes at Devonport. *Roysterer* based at Devonport, *Rollicker* in the Clyde. Cost well over £2 million apiece. Ordered November 1968 *(Rollicker, Roysterer)* and May 1970 *(Robust)*. Launch dates: *Robust* 7 October 1971, *Rollicker* 29 January 1971, *Roysterer* 20 April 1970.

ROLLICKER *5/1980, Michael D. J. Lennon*

Name	*No.*	*Builders*	*Commissioned*
TYPHOON	A 95	Henry Robb & Co Ltd, Leith	1960

Displacement, tons: 800 standard; 1 380 full load
Dimensions, feet (metres): 200 × 40 × 13 *(61 × 13 × 4)*
Main engines: 2 turbocharged ASR 1 Vee type 12-cyl diesels; 1 shaft; 2 750 bhp = over 16 knots

Launched on 14 October 1958. Cp propeller, 150 rpm. Fitted for fire-fighting, salvage and ocean rescue, with a heavy mainmast and derrick attached. Bollard pull 32 tons. At Portland.

TYPHOON *1977, Michael D. J. Lennon*

5 "CONFIANCE" CLASS

Name	*No.*	*Builders*	*Commissioned*
AGILE	A 88	Goole S.B. Co.	July 1959
ADVICE	A 89	A. & J. Inglis Ltd, Glasgow	Oct 1959
ACCORD	A 90	A. & J. Inglis Ltd, Glasgow	Sep 1958
CONFIANCE	A 289	A. & J. Inglis Ltd, Glasgow	27 Mar 1956
CONFIDENT	A 290	A. & J. Inglis Ltd, Glasgow	Jan 1956

Displacement, tons: 760 full load
Dimensions, feet (metres): 154·8 × 35 × 12 *(47·2 × 10·7 × 3·7)*
Main engines: 4 Paxman HAXM diesels; 2 shafts; 1 800 bhp = 13 knots
Range, miles: 6 500 at 10 knots
Complement: 29 plus 13 salvage party

Fitted with 2·5 m diameter Stone Kamewa cp propellers. *Accord, Advice* and *Agile*, formerly rated as dockyard tugs were officially added to the "Confiance" class in 1971 as part of the Royal Maritime Auxiliary Service ocean towing force although there are minor differences between these three and the "Confiance" pair. Fitted for one 40 mm gun.

Appearance: *Agile* is the only one with a tall mainmast. *Confiance* now fitted with a "Roysterer" type rubber bow fender.

CONFIDENT *5/1980, Michael D. J. Lennon*

1 OCEAN TUG

Name	*No.*	*Builders*	*Commissioned*
CYCLONE *(ex-Growler)*	A 111	Henry Robb Ltd, Leith	Sep 1943

Displacement, tons: 1 118 light; 1 630 full load
Dimensions, feet (metres): 205 × 40·2 × 16·8 *(62·5 × 12·3 × 5·1)*
Main engines: 2 Atlas Polar 8-cyl diesels; 1 shaft; 4 000 bhp = 16 knots
Oil fuel, tons: 405
Range, miles: 17 000 (economical)
Complement: 42

Last of the eight original "Bustler" class, in Gibraltar to be relieved by *Agile* 1981. Launch date: 10 September 1942.

CYCLONE *1975, Michael D. J. Lennon*

2 "DIRECTOR" CLASS

Name	*No.*	*Builders*	*Commissioned*
FAITHFUL	A 85	Yarrow & Sons Ltd	1958
DEXTEROUS	A 93	Yarrow & Sons Ltd	1957

Displacement, tons: 710 full load
Dimensions, feet (metres): 157·2 × 30 (60 over paddle boxes) × 11·5 *(47·9 × 9·2 (18·4) × 3·5)*
Main engines: Paxman diesels and BTH motors; diesel-electric; 2 shafts; 2 paddle wheels; 2 000 bhp = 13 knots
Range, miles: 4 000 at 12 knots
Complement: 21

Dexterous at Gibraltar—to be relieved. The only class of paddlers run by any navy in the world, this then being considered the best arrangement for working with aircraft carriers.

FAITHFUL *9/1980, Michael D. J. Lennon*

4 "ADEPT" CLASS (TUT)

ADEPT A 224
BUSTLER A 225
CAPABLE A 226
CAREFUL A 227

Displacement, tons: 450
Length, feet (metres): 121·4 *(37)*
Main engine: One diesel; Voith-Schneider propeller = 12 knots

"Twin unit tractors" (TUT) ordered from Richard Dunston (Hessle) on 22 February 1979. Primarily for harbour work with coastal towing capability. Bollard pull, 28 tons. First of a new generation of tugs. *Adept* laid down 23 July 1979. All completed late 1980—*Adept* accepted 29 October 1980.
Adept and *Bustler* at Portsmouth, *Capable* and *Careful* at Plymouth.

ADEPT *11/1980, Michael D. J. Lennon*

BARBARA *6/1980, L. and L. van Ginderen*

8 "MODIFIED GIRL" CLASS

DAISY A 145
DAPHNE A 156
DOROTHY A 173
EDITH A 177
CHARLOTTE A 210
CHRISTINE A 217
CLARE A 218
DORIS A 252

Of 38 tons. 495 bhp = 10 knots. *Clare* in Hong Kong manned by the Royal Navy. *Edith* at Gibraltar.
"C" names built by Pimblott and "D" and "E" names by Dunstons. Completed 1971-72.
Celia sold to Sembawang Dockyard, Singapore in 1971.

CLARE (Hong Kong) *1979, Dr. Giorgio Arra*

19 "DOG" CLASS

AIREDALE A 102
ALSATIAN A 106
CAIRN A 126
DALMATIAN A 129
DEERHOUND A 155
ELKHOUND A 162
LABRADOR A 168
HUSKY A 178
MASTIFF A 180
SALUKI A 182
POINTER A 188
SETTER A 189
SEALYHAM A 197
SPANIEL A 201
SHEEPDOG A 250
FOXHOUND (ex-*Boxer*) A 326
BASSET (ex-*Beagle*) A 327
COLLIE A 328
CORGI A 330

Displacement, tons: 170 full load
Dimensions, feet (metres): 94 × 24·5 × 12 *(28·7 × 7·5 × 3·7)*
Main engines: Lister-Blackstone diesels; 1 320 bhp = 10 knots
Range, miles: 2 400 at 10 knots
Complement: 8

Harbour berthing tugs. *Airedale* and *Sealyham* at Gibraltar. Bollard pull 16 tons. Completed 1962-72. *Foxhound* renamed 22 October 1977 to free the name *Boxer* for new Type 22 frigate.

Appearance: Varies considerably, some with mast, some with curved upper-bridge work, some with flat monkey-island.

MASTIFF *6/1980, L. and L. van Ginderen*

12 "TRITON" CLASS

KATHLEEN A 166
KITTY A 170
LESLEY A 172
LILAH A 174
MARY A 175
IRENE A 181
ISABEL A 183
JOAN A 190
JOYCE A 193
MYRTLE A 199
NANCY A 202
NORAH A 205

All completed by August 1974 by Dunstons. "Water-tractors" with small wheelhouse and adjoining funnel. 58 ft *(17·7 m)* and of 107·5 tons.
Voith-Schneider vertical axis propellers; 330 bhp = 8 knots

IRENE *1/1981, Michael D. J. Lennon*

8 "GIRL" CLASS

ALICE A 113
AGATHA A 116
AUDREY A 117
AGNES A 121
BETTY A 322
BRIDGET A 323
BARBARA A 324
BRENDA A 325

Of 40 tons. 495 bhp = 10 knots. "A" names built by P. K. Harris, "B" names by Dunstons. Completed 1962-72. *Barbara* at Chatham.

8 "FELICITY" CLASS

FELICITY A 112
FRANCES A 147
FIONA A 148
FLORENCE A 149
GENEVIEVE A 150
GEORGINA A 152
GWENDOLINE A 196
HELEN A 198

"Water tractors". Of 80 tons. 600 bhp; single Voith-Schneider = 10 knots. First five completed 1973. *Felicity* built by Dunstons and remainder by Hancocks. A 147, 149 and 150 ordered early 1979 from Richard Dunston (Thorne) and completed by end 1980.

FRANCES *1/1981, Lawrence Phillips*

FLEET TENDERS

DOLWEN (ex-*Hector Gull*) A 362

Displacement, tons: 602 full load
Measurement, tons: 354·6 gross; 115·9 net
Dimensions, feet (metres): 135 × 29·5 × 14·5 *(41·1 × 9 × 4·4)*
Main engine: 1 National FSSM6 diesel; 1 shaft (cp propeller)

Built at Appledore by P. K. Harris in 1962 as stern trawler. Converted to buoy tender and now operates as range safety ship for RAE, Aberporth.

DOLWEN *1/1978, Michael D. J. Lennon*

7 "INSECT" CLASS

Name	*No.*	*Builders*	*Commissioned*
BEE	A 216	C. D. Holmes Ltd, Beverley, Humberside	1970
CICALA	A 263	C. D. Holmes Ltd, Beverley, Humberside	1971
COCKCHAFER	A 230	C. D. Holmes Ltd, Beverley, Humberside	1971
CRICKET	A 229	C. D. Holmes Ltd, Beverley, Humberside	1972
GNAT	A 239	C. D. Holmes Ltd, Beverley, Humberside	1972
LADYBIRD	A 253	C. D. Holmes Ltd, Beverley, Humberside	1973
SCARAB	A 272	C. D. Holmes Ltd, Beverley, Humberside	1973

Displacement, tons: 450 full load
Dimensions, feet (metres): 111·8 × 28 × 11 *(34·1 × 8·5 × 3·4)*
Main engine: 1 Lister-Blackstone diesel; 1 shaft; 660 bhp = 10·5 knots
Range, miles: 3 000 at 10 knots
Complement: 10

First three built as stores carriers, three as armament carriers and *Scarab*, as mooring vessel capable of lifting 10 tons over the bows. *Cricket* acts as a mooring vessel in the Clyde while *Gnat* and *Ladybird* operate as armament carriers with a red funnel band. Of 200 ton cargo capacity and 2 ton crane.

BEE *7/1980, L. and L. van Ginderen*

1 DIVING TENDER

Name	*No.*	*Builders*	*Commissioned*
DATCHET	A 357	Vospers Ltd (Singapore)	1972

Main engines: 2 Gray diesels; 2 shafts; 450 bhp = 12 knots

Royal Navy manned at Plymouth.

DATCHET *7/1978, Leo van Ginderen*

5 DIVING TENDERS

Name	*No.*	*Builders*	*Commissioned*
ILCHESTER	A 308	Gregson Ltd, Blyth	1974
INSTOW	A 309	Gregson Ltd, Blyth	1974
IRONBRIDGE	A 310	Gregson Ltd, Blyth	1974
INVERGORDON	A 311	Gregson Ltd, Blyth	1974
IXWORTH	A 318	Gregson Ltd, Blyth	1974

Of similar characteristics to "Clovelly" class. Royal Navy manned except *Ilchester* and *Instow* (RMAS).

IXWORTH *9/1980, Michael D. J. Lennon*

10 "LOYAL" CLASS (RNXS and RN)

ALERT (ex-*Loyal Governor*) P 252
VIGILANT (ex-*Loyal Factor*) P 254
LOYAL HELPER A 157
SUPPORTER (ex-*Loyal Supporter*) A 158
LOYAL WATCHER A 159
LOYAL VOLUNTEER A 160
LOYAL MEDIATOR A 161
LOYAL MODERATOR A 220
LOYAL CHANCELLOR A 1770
LOYAL PROCTOR A 1771

Details as for "Clovelly" class. *Alert* and *Vigilant* classified as "Patrol Craft" as they carry out patrols off Ulster. Royal Navy manned. *Loyal Helper* completed 10 February 1978 and last four later in 1978.

Bases: Portsmouth: *Loyal Mediator.*
Portland: *Loyal Chancellor.*
Plymouth: *Loyal Moderator, Loyal Watcher* (Birkenhead).
Medway: *Loyal Helper.*
Scotland: *Loyal Volunteer, Loyal Proctor, Supporter* (Belfast).

LOYAL MEDIATOR *7/1980, L. and L. van Ginderen*

27 "CLOVELLY" CLASS

Name	No.	Builders	Commissioned
CLOVELLY	A 389	I. Pimblott & Sons, Northwich	1972
CRICCIETH	A 391	I. Pimblott & Sons, Northwich	1972
CRICKLADE	A 381	C. D. Holmes, Beverley, Humberside	1971
CROMARTY	A 488	J. Lewis, Aberdeen	1972
DENMEAD	A 363	C. D. Holmes, Beverley, Humberside	1972
DORNOCH	A 490	J. Lewis, Aberdeen	1972
DUNSTER	A 393	R. Dunston, Thorne	1972
ELKSTONE	A 353	J. Cook, Wivenhoe	1971
ELSING	A 277	J. Cook, Wivenhoe	1971
EPWORTH	A 355	J. Cook, Wivenhoe	1972
ETTRICK	A 274	J. Cook, Wivenhoe	1972
FELSTED	A 348	R. Dunston, Thorne	1972
FINTRY	A 394	J. Lewis, Aberdeen	1972
FOTHERBY	A 341	R. Dunston, Thorne	1972
FROXFIELD	A 354	R. Dunston, Thorne	1972
FULBECK	A 365	C. D. Holmes, Beverley	1972
GLENCOE	A 392	I. Pimblott & Sons, Northwich	1972
GRASMERE	A 402	J. Lewis, Aberdeen	1972
HAMBLEDON	A 1769	R. Dunston, Thorne	1973
HARLECH	A 1768	R. Dunston, Thorne	1973
HEADCORN	A 1766	R. Dunston, Thorne	1973
HEVER	A 1767	R. Dunston, Thorne	1973
HOLMWOOD	A 1772	R. Dunston, Thorne	1973
HORNING	A 1773	R. Dunston, Thorne	1973
LAMLASH	A 208	R. Dunston, Thorne	1974
LECHLADE	A 211	R. Dunston, Thorne	1974
LLANDOVERY	A 207	R. Dunston, Thorne	1974

Displacement, tons: 143 full load
Dimensions, feet (metres): 80 × 21 × 6·6 *(24·4 × 6·4 × 2)*
Main engine: 1 Lister-Blackstone diesel; 1 shaft; 320 bhp = 10 knots
Range, miles: 900 at 10 knots
Complement: 6

All fleet tenders of an improved "Aberdovey" class. *Elsing* and *Ettrick* at Gibraltar (Royal Navy manned), used for patrol duties. Can be used for varying tasks—cargo, passenger, training, diving *(Dornoch* and *Fotherby)*. Listed in alphabetical order as not all carry pennant numbers. Of 36 ton cargo capacity.

ELKSTONE *1/1981, Lawrence Phillips*

14 "ABERDOVEY" CLASS

Name	No.	Builders	Commissioned
ABERDOVEY	Y 10	I. Pimblott & Sons, Northwich	1963
ABINGER	Y 11	I. Pimblott & Sons, Northwich	1964
ALNESS	Y 12	I. Pimblott & Sons, Northwich	1965
ALNMOUTH	Y 13	I. Pimblott & Sons, Northwich	1966
APPLEBY	A 383	I. Pimblott & Sons, Northwich	1967
ASHCOTT	Y 16	I. Pimblott & Sons, Northwich	1968
BEAULIEU	A 99	J. S. Doig, Grimsby	1966
BEDDGELERT	A 100	J. S. Doig, Grimsby	1967
BEMBRIDGE	A 101	J. S. Doig, Grimsby	1968
BIBURY	A 103	J. S. Doig, Grimsby	1969
BLAKENEY	A 104	J. S. Doig, Grimsby	1970
BRODICK	A 105	J. S. Doig, Grimsby	1971
CARTMEL	A 350	I. Pimblott & Sons, Northwich	1971
CAWSAND	A 351	I. Pimblott & Sons, Northwich	1971

Displacement, tons: 117·5 full load
Dimensions, feet (metres): 79·8 × 18 × 5·5 *(24 × 5·5 × 1·7)*
Main engine: 1 Lister-Blackstone diesel; 1 shaft; 225 bhp = 10·5 knots
Range, miles: 900 at 10 knots
Complement: 6

Multi-purpose for stores (25 tons), passengers (200 standing) plus a couple of torpedoes. *Alness* and *Ashcott* at Gibraltar (Royal Navy manned). *Alnmouth* operates from Devonport for Sea Cadet Corps training. *Bembridge* at Portsmouth for Sea Cadet Corps. *Aberdovey* with RMs, Poole.

ALNMOUTH *8/1980, Michael D. J. Lennon*

2 + 6 "23 METRE" TYPE

MANLEY, MENTOR, MESSINA, MILLBROOK, MELTON, MENAI, MEON, MILFORD

All to be built by Richard Dunston, Hessle.
First pair ordered 1981.

2 "HAM" CLASS (RNXS)

SHIPHAM M 2726 **PORTISHAM** M 2781

Details in Mine Warfare section. Being replaced by new construction "Loyal" class. *Shipham* based in Medway and *Portisham* at Portsmouth.

SHIPHAM *8/1978, J. L. M. van der Burg*

8 MFV TYPE

61 ft Type: MFV 7, 15, 96, 140
45 ft Type: MFV 740, 775, 816, 911

A number of MFV types are used by other authorities not necessarily under naval control.

1 "HAM" CLASS

WARMINGHAM M 2737

Of the "Ham" class of Inshore Minesweepers. For details see Mine Warfare section. RNR Tender.

OLIVER TWIST

Ex-RCT General Service Launch of 20 tons. RNR tender.

TRANSPORT

SANDRINGHAM M 2791

Of the "Ham" class of Inshore Minesweepers. For details see Mine Warfare section. Used as personnel transport in the Clyde. There is also FDC 7001 (commonly known as *James Bond*) which also acts as a transport in the Clyde/Faslane area.

SANDRINGHAM *5/1978, A. Denholm*

TANK CLEANING VESSELS

2 "ISLES" CLASS

Name	No.	Builders	Commissioned
CALDY	A 332	John Lewis and Sons	1943
LUNDY	A 336	Cook Welton and Gemmell	1943

Displacement, tons: 770 full load
Dimensions, feet (metres): 164 × 27·5 × 14 *(50 × 8·4 × 4·2)*
Main engines: Triple expansion; 1 shaft; 850 ihp = 12 knots
Boiler: 1 cylindrical
Coal, tons: 183

Last survivors, in UK service, of a class of 145 built for minesweeping and escort duties during the war. Most of them were employed on wreck dispersal after the war until conversion to their present role in 1951-57.

CALDY *4/1980, Michael D. J. Lennon*

DEGAUSSING VESSELS

2 "MAGNET" CLASS

MAGNET A 114 **LODESTONE** A 115

Displacement, tons: 955 full load
Dimensions, feet (metres): 179·7 × 37·4 × 9·8 *(54·8 × 11·4 × 3)*
Main engines: 2 Mirrlees Blackstone diesels = 12 knots
Range, miles: 1 750 at 12 knots
Complement: 15

The pair replaced the three "Ham" class, *Magnet* in the Clyde and *Lodestone* at Portsmouth. Ordered from Cleland S.B. Co Ltd, Wallsend in mid-1978. *Magnet* launched 12 July 1979. *Lodestone* laid down 22 December 1978, launched 20 November 1979.

LODESTONE *4/1980, Michael D. J. Lennon*

SCOTTISH FISHERY PROTECTION VESSELS

SWITHA

Measurement, tons: 1 250 gross; 320 deadweight
Dimensions, feet (metres): 233·9 × 38 × 14·8 *(71·3 × 11·6 × 4·5)*
Main engines: 2 Ruston 12 RKCM diesels; 5 640 hp = 18 knots
Complement: 26

Built by Ferguson Bros (Port Glasgow) Ltd in 1979-80 (No 483). Fitted with 450 bhp bow thruster and helicopter platform for BO 105.

2 "JURA" CLASS

Name	*No.*	*Builders*	*Commissioned*
JURA	—	Hall Russell & Co, Aberdeen	1973
WESTRA	—	Hall Russell & Co, Aberdeen	1975

Displacement, tons: 778 light; 1 285 full load
Measurement, tons: 942 gross
Dimensions, feet (metres): 195·3 × 35 × 14·4 *(59·6 × 10·7 × 4·4)*
Main engines: 2 British Polar SP112VS-F diesels; 4 200 bhp; 1 shaft = 17 knots
Complement: 28

Jura was leased by the Ministry of Defence for oil-rig patrol and armed with one 40 mm. Returned from Royal Navy service January 1977 and disarmed. *Westra* was launched on 6 August 1974.

JURA *5/1978, A. Denholm*

Other ships are operated by Department of Agriculture and Fisheries for Scotland—*Brenda* of 189 ft and 460 tons built in 1951, *Norna* 195 ft and 600 tons built in 1959, *Sulisker* built in 1980.

ROYAL CORPS OF TRANSPORT

As well as "Ardennes" and "Avon" classes listed in the Amphibious Warfare section the following craft are operated by the RCT.

Deletions

1979 *Oliver Twist* (to RNR), *Shelduck*
1980 *R. G. Masters V.C., Smike, Carp, Chub*

COLONEL TEMPLER (ex-*Criscilla*)

Measurement, tons: 952 gross; 411 net
Dimensions, feet (metres): 185·5 × 36 × 13·4 *(56·6 × 11 × 4·1)*

Built in 1966 by Hall Russell and Co, Aberdeen as stern-trawler. Purchased 1980 and operated by RCT for Royal Aircraft Establishment, Farnborough.

COLONEL TEMPLER *8/1980, Michael D. J. Lennon*

1 MFV

YARMOUTH NAVIGATOR

Navigation training vessel. Built in 1944 by Richards Ironworks. Of 95 ft and 40 tons. Speed—8 knots.

YARMOUTH NAVIGATOR *7/1980, Michael D. J. Lennon*

1 RANGE SAFETY CRAFT

ALFRED HERRING V.C.

Displacement, tons: 70
Dimensions, feet (metres): 77·7 × 18 × 4·9 *(23·7 × 5·5 × 1·5)*
Main engines: 2 Paxman 8YJ CM 4 diesels; 2 000 bhp = 20 knots

Built by James and Stone, Brightlingsea. Commissioned 1978. Serves at the Royal Artillery Missile Range in the Outer Hebrides. Similar design to RAF "Spitfire" class RTTL Mk 3.

ALFRED HERRING V.C. *10/1978, Michael D. J. Lennon*

4 + (?) RANGE SAFETY CRAFT

SAMUEL MORLEY V.C.
JOSEPH HUGHES G.C.
RICHARD MASTERS V.C.
JAMES DALTON V.C.

Displacement, tons: 19
Dimensions, feet (metres): 49·2 × 14·9 × 5·2 *(15 × 4·6 × 1·6)*
Main engines: 2 Rolls Royce C8M410 diesels; 820 bhp = 17 knots
Complement: 3

First built by Fairey Marine and remainder by A. R. P. Whitstable to replace general service launches.
Joseph Hughes G.C. in Hong Kong.

SAMUEL MORLEY V.C. *1978, Michael D. J. Lennon*

1 GENERAL SERVICE LAUNCH

TREVOSE

Of 72 ft, 74 tons and 12 knots. Navigation training vessel. Built by Vospers Ltd in 1964.

TREVOSE *3/1980, Michael D. J. Lennon*

3 GENERAL SERVICE LAUNCHES

MARTIN
NEWMAN NOGGS
RADDLE

Of 50 ft, 20 tons and 8 knots. Built 1944-46. Used for personnel transport and target work.

5 GENERAL DUTIES LAUNCHES

BREAM WB 03
BARBEL WB 04
ROACH WB 05
PERCH WB 06
PIKE WB 07

Work-boats of 47 ft, 19 tons and 8 knots. Built 1966-71.

BARBEL *7/1978, Leo van Ginderen*

5 COMMAND and CONTROL CRAFT

PETREL L 01
TERN L 02
FULMAR L 03
SKUA L 04
SHEARWATER L 07

Craft of 41 ft, 12 tons and 15 knots. Built in 1971. Used for logistics control in ports or beach-heads.

PETREL *2/1977, Michael D. J. Lennon*

2 Ex-SAR CRAFT

HYPERION (ex-1385)
MINORU (ex-1667)

Hyperion of 1300 Series RAF Pinnaces; *Minoru* of 1600 Series range safety launches. Details under RAF Marine Craft below. *Hyperion* in Cyprus.

ROYAL AIR FORCE MARINE CRAFT

Director, Marine Craft: Group Captain J. E. F. Williams

New Construction: All wooden craft to be replaced by "Seal" class, "Spitfire" class and 27 ft Cheverton work-boats by end 1981.

3 "SEAL" CLASS (LRRSC)

Name	*No.*	*Builders*	*Commissioned*
SEAL	5000	Brooke Marine, Lowestoft	Aug 1967
SEAGULL	5001	Fairmile Construction, Berwick-on-Tweed	1970
SEA OTTER	5002	Fairmile Construction, Berwick-on-Tweed	1970

Displacement, tons: 159 full load
Dimensions, feet (metres): 120·3 × 23·5 × 6·5 *(36·6 × 7·2 × 2)*
Main engines: 2 Paxman diesels; 2 200 hp; 2 shafts = 21 knots
Complement: 18

Long range recovery and support craft (LRRSC). All welded steel hulls. Aluminium alloy superstructure. Used for weapon recovery, target towing, search and rescue.

SEA OTTER *4/1978, Michael D. J. Lennon*

8 "SPITFIRE" CLASS (RTTL Mk 3)

Name	*No.*	*Builders*	*Commissioned*
SPITFIRE	4000	James and Stone, Brightlingsea	1972
SUNDERLAND	4001	James and Stone, Brightlingsea	1976
STIRLING	4002	James and Stone, Brightlingsea	1976
HALIFAX	4003	James and Stone, Brightlingsea	1977
HAMPDEN	4004	—	—
HURRICANE	4005	—	—
HARVARD	4006	—	—
HUDSON	4007	—	—

Displacement, tons: 70
Dimensions, feet (metres): 77·7 × 18 × 4·9 *(23·7 × 5·5 × 1·5)*
Main engines: 2 Paxman diesels; 2 100 hp = 22 knots
Complement: 9

Rescue target towing launches (RTTL). All welded steel hulls; aluminium alloy superstructure. *Spitfire* has twin funnels, remainder none.

STIRLING *1/1978, Michael D. J. Lennon*

4 RESCUE TARGET TOWING LAUNCHES Mk 2 (RTTL Mk 2)

2752, 2757, 2768, 2771

Displacement, tons: 34·6
Dimensions, feet (metres): 68 × 19 × 6 *(20·7 × 5·8 × 1·8)*
Main engines: 2 Rolls-Royce Sea Griffon; 1 100 bhp = 30 knots
Complement: 9

Hard chine, wooden hulls. Built by Vospers, Saunders Roe and Groves and Gutteridge. To be replaced by RTTL Mk 3.

5 RANGE SAFETY LAUNCHES 1600 SERIES

1640, 1651, 1656, 1659, 1668

Displacement, tons: 12 full load
Dimensions, feet (metres): 43 × 13 × 4 *(13·1 × 4 × 1·2)*
Main engines: 2 Rolls-Royce C6 diesels; 190 bhp = 16 knots
Complement: 4

Hard chine, wooden double diagonal hulls. Built 1955-56.

9 PINNACES 1300 SERIES

1371, 1374, 1380, 1387, 1388, 1389, 1390, 1391, 1392

Displacement, tons: 28·3
Dimensions, feet (metres): 63 × 15·5 × 5 *(19·2 × 4·7 × 1·5)*
Main engines: 2 Rolls-Royce C6 diesels; 190 bhp = 13 knots
Complement: 5

Hard chine, wooden hulls. Built by Groves and Gutteridge, Robertsons (Dunoon) and Dorset Yacht Co (Poole) in 1955-65. Of 5 ton cargo capacity.

1300 Pinnace Series *1975, RAF*

HARBOUR CRAFT

2000-2004

24 ft tenders and Gemini craft in current use. To be replaced by 27 ft Cheverton work-boats by end 1981.

HM CUSTOMS

The Customs and Excise (Waterguard) of HM Treasury operate a considerable number of craft around the UK, including Fairey Marine Trackers and two Brooke Marine 33 metre craft.

POLICE SERVICE

Police craft of many sizes operate in all the major ports, although rarely met with beyond the port limits.

TRINITY HOUSE

A number of vessels of varying types—buoy-layers, pilot craft, lighthouse tenders—may be met throughout the waters of the UK.

UNITED STATES OF AMERICA

Administration

Secretary of the Navy:
Hon. John H. Lehman, Jnr

There are one Under Secretary and four Assistant Secretaries.

Principal Appointments by Flag Officers' Seniority

Chief of Naval Operations:
Admiral Thomas B. Hayward
Director, Division of Naval Reactors and Deputy-Commander for Nuclear Propulsion, Naval Sea Systems Command:
Admiral Hyman G. Rickover (ret)
Commander-in-Chief, Pacific:*
Admiral Robert L. J. Long
Commander-in-Chief, US Pacific Fleet:
Admiral Donald C. Davis
Chief of Naval Material:
Admiral Alfred J. Whittle, Jnr
Commander-in-Chief, Atlantic; Commander-in-Chief, US Atlantic Fleet and Supreme Allied Commander, Atlantic (NATO):
Admiral Harry D. Train II
Vice-Chief of Naval Operations:
Admiral James D. Watkins
Commander-in-Chief, Allied Forces, Southern Europe:
Admiral William J. Crowe, Jnr
Commander, Third Fleet:
Vice-Admiral Edward C. Waller III
Commander, Second Fleet:
Vice-Admiral Thomas J. Bigley
Commander, Sixth Fleet and Commander Strike Force South (NATO):
Vice-Admiral William N. Small
Commander, Naval Air Force, US Atlantic Fleet:
Vice-Admiral George E. R. Kinnear II
Commander, Seventh Fleet:
Vice-Admiral Carlisle A. H. Trost
Commander-in-Chief, US Naval Forces, Europe:
Vice-Admiral Ronald J. Hays
Commander, Naval Surface Force, US Pacific Fleet:
Vice-Admiral Lee Baggett, Jnr
Commander, Naval Surface Force, US Atlantic Fleet:
Vice-Admiral John D. Johnson, Jnr
Commander, Naval Air Systems Command:
Vice-Admiral Ernest R. Seymour
Commander, Naval Air Force, US Pacific Fleet:
Vice-Admiral Robert F. Schoultz
Commander, Naval Sea Systems Command:
Vice-Admiral Earl B. Fowler, Jnr
Commander, Submarine Force, US Atlantic Fleet:
Vice-Admiral Steven A. White
Commander, Submarine Force, US Pacific Fleet:
Rear Admiral Nils R. Thunman
Commander, Caribbean Contingency Joint Task Force:
Rear Admiral Robert P. McKenzie
Commander, US Naval Forces, Caribbean:
Rear Admiral Arthur K. Knoizen
Commander, Middle East Force:
Rear Admiral Robert W. Chewning
Commander, Military Sealift Command:
Rear Admiral Bruce Keener II
Commander, Naval Electronics Command:
Rear Admiral Henry D. Arnold
Commander, Mine Warfare Command:
Rear Admiral Charles F. Horne III
Commander, US Naval Forces, Korea:
Rear Admiral Stephen J. Hostettler
Commander, US Naval Forces, Japan:
Rear Admiral Donald L. Felt

* Unified Command with the Commander-in-Chief directing all US Navy, Army and Air Force activities in the area.

Marine Corps

Commandant:
General Robert H. Barrow
Assistant Commandant:
General Kenneth McLennan

Diplomatic Representation

Defence Attaché in Moscow:
Rear Admiral William G. Sizemore
Naval Attaché in Moscow:
Captain George C. Montgomery, Jnr
Defence Attaché in London:
Captain Duane L. Heisinger
Naval Attaché in Paris:
Captain Thomas L. Sissone, Jnr

Personnel

	30 Sep 1979 (Actual)	*30 Sep 1980 (Actual)*	*30 Sep 1981 (Planned)*
Navy			
Officers	62 186	67 584	69 336
Enlisted personnel	455 041	459 569	468 120
Marine Corps			
Officers	18 166	17 917	18 067
Enlisted personnel	167 021	167 283	170 033

Mercantile Marine

Lloyd's Register of Shipping:
5 579 vessels of 18 464 271 tons gross

US Commerce Department (vessels over 1 000 tons) (1 Jan 1981):
Active: 545 vessels of 20 449 224 tons deadweight
Reserve: 283 vessels of 2 850 086 tons deadweight

Strength of the Fleet

Number of ships listed in this table are actual as of 1 March 1981, based on official tabulations and including ships and craft attached to the Naval Reserve Force (NRF) and Military Sealift Command (MSC).

Type		*Active*	*Building*	*Reserve*	*Conversion*
Strategic Missile Submarines					
SSBN	Ballistic Missile Submarines (nuclear-powered)	36	8	2	—
Attack Submarines					
SSN	Submarines (nuclear-powered)	77	24	3	—
SS	Submarines (conventionally-powered)	5	—	1	—
Auxiliary Submarine					
SSAG	Auxiliary Submarine	1	—	—	—
Aircraft Carriers					
CVN	Multi-purpose Aircraft Carriers (nuclear-powered)	3	2	—	—
CV	Multi-purpose Aircraft Carriers	10	—	1	—
CVA	Attack Aircraft Carrier	—	—	1	—
CVS	ASW Aircraft Carriers	—	—	3	—
Battleships					
BB	Battleships	—	—	4	—
Cruisers					
CGN	Guided Missile Cruisers (nuclear-powered)	9	—	—	—
CG	Guided Missile Cruisers	18	4	2	—
CA	Gun Cruisers	—	—	2	—
Destroyers					
DDG	Guided Missile Destroyers	37	4	—	—
DD	Destroyers	51	1	—	—
Frigates					
FFG	Guided Missile Frigates	15	36	—	—
FF	Frigates	59	—	—	—
Light Forces					
PHM	Guided Missile Patrol Combatants (hydrofoil)	1	5	—	—
PG	Patrol Combatants	2	—	2	—
PCH	Patrol Craft (hydrofoil)	1	—	—	—
PTF	Fast Patrol Craft	1	—	—	—
Amphibious Warfare Ships					
LCC	Amphibious Command Ships	2	—	—	—
LHA	Amphibious Assault Ships (GP)	5	—	—	—
LKA	Amphibious Cargo Ships	5	—	1	—
LPD	Amphibious Transport Docks	13	—	—	—
LPH	Amphibious Assault Ships (helicopter)	7	—	—	—
LSD	Dock Landing Ships	13	1	—	—
LST	Tank Landing Ships	20	—	3	—
Mine Warfare Forces					
MSO	Minesweepers—Ocean	25	—	—	—
Auxiliary Ships					
AD	Destroyer Tenders	10	2	—	—
AE	Ammunition Ships	13	—	—	—
AF	Stores Ship	1	—	—	—
AFS	Combat Stores Ships	8	—	—	—
AG	Miscellaneous	2	—	—	—
AGDS	Deep Submergence Support Ship	1	—	—	—
AGF	Miscellaneous Command Ships	2	—	—	—
AGM	Missile Range Instrumentation Ships	4	—	—	1
AGOR	Oceanographic Research Ships	5	—	1	—
AGOS	Ocean Surveillance Ships	—	8	—	—
AGS	Surveying Ships	9	—	—	—
AGSS	Auxiliary Research Submarine	1	—	—	—
AH	Hospital Ship	—	—	1	—
AK	Cargo Ships	6	—	4	1
AKR	Vehicle Cargo Ships	4	—	—	—
AO	Oilers	16	4	—	—
AOE	Fast Combat Support Ships	4	—	—	—
AOG	Gasoline Tankers	3	—	—	—
AOR	Replenishment Oilers	7	—	—	—
AOT	Transport Oilers	18	—	6	—
AP	Transports	—	—	9	—
AR	Repair Ships	4	—	—	—
ARC	Cable Repairing Ships	3	1	—	—
ARL	Repair Ship, Small	—	—	1	—
ARS	Salvage Ships	7	1	1	—
AS	Submarine Tenders	12	1	1	—
ASR	Submarine Rescue Ships	6	—	—	—
ATF	Fleet Ocean Tugs	12	2	1	—
ATA	Auxiliary Ocean Tug	—	—	1	—
ATS	Salvage and Rescue Ships	3	—	—	—
AVM	Guided Missile Ship	1	—	—	—
AVT	Auxiliary Aircraft Landing Training Ship	1	—	—	—
Service Craft					
All Types*		1 109	9	1 109	—

* Total number of Service Craft in the US Navy. Active/reserve breakdown not available.

Special Notes

To provide similar information to that included in other major Navies' Deployment Tables the fleet assignment (abbreviated "F/S") status of each ship in the US Navy has been included. The assignment appears in a column immediately to the right of the commissioning date. In the case of the Floating Drydock section this system is not used. The following abbreviations are used to indicate fleet assignments:

AA	Active, Atlantic Fleet
ACTIVE	Active under charter with MSC
AR	In Reserve, Out of Commission, Atlantic Fleet
ASA	Active, In Service, Atlantic Fleet
ASR	In Reserve, Out of Service, Atlantic Fleet
Bldg	Building
CONV	Ship undergoing conversion
LOAN	Ship or craft loaned to another government, or non-government agency, but US Navy retains title and the ship or craft is on the NVR
MAR	In Reserve, Out of Commission, Atlantic Fleet and laid up in the temporary custody of the Maritime Administration
MPR	Same as "MAR", but applies to the Pacific Fleet
NRF	Assigned to the Naval Reserve Force (ships so assigned are listed in a special table, at the end of each major category, that indicates NRF homeport, date assigned to NRF and which ship, if any, it replaced)
Ord	The contract for the construction of the ship has been let, but actual construction has not yet begun
PA	Active, Pacific Fleet
PR	In Reserve, Out of Commission, Pacific Fleet
Proj	The ship is scheduled for construction at some time in the immediate future
PSA	Active, In Service, Pacific Fleet
PSR	In Reserve, Out of Service, Pacific Fleet
RDF	Active, Rapid Deployment Force
TAA	Active, Military Sealift Command, Atlantic Fleet
TAR	In Ready Reserve, Military Sealift Command, Atlantic Fleet
TPA	Active, Military Sealift Command, Pacific Fleet
TPR	In Ready Reserve, Military Sealift Command, Pacific Fleet
TWWR	Active, Military Sealift Command, World-wide Routes

Ship Status Definitions

In Commission: As a rule any ship, except a Service Craft, that is active, is in commission. The ship has a Commanding Officer and flies a commissioning pennant. "Commissioning date" as used in this section means the date of being "in commission" rather than "completion" or "acceptance into service" as used in some other navies.
In Service: all service craft (drydocks and with classifications that start with "Y"), with the exception of *Constitution*, that are active, are "in service". The ship has an Officer-in-Charge and does not fly a commissioning pennant.
Ships "in reserve, out of commission" or "in reserve, out of service" are put in a state of preservation for future service. Depending on the size of the ship or craft, a ship in "mothballs" usually takes from 30 days to nearly a year to restore to full operational service.
The above status do not apply to the Military Sealift Command.

Shipbuilding/Conversion Programmes

Carter Administration Planned Five Year Shipbuilding/Conversion Programme (Fiscal Year 1982-86)

Shipbuilding*
- 6 "Ohio" class Fleet Ballistic Missile Submarines (SSBN)
- 6 "Los Angeles" class Submarines (nuclear propulsion) (SSN)
- 1 New design Submarine (nuclear propulsion) (FA-SSN) (SSN)
- 16 "Ticonderoga" class Guided Missile Cruisers (CG)
- 1 New design Guided Missile Destroyer (DDGX)
- 1 "Oliver Hazard Perry" class Guided Missile Frigate (FFG)
- 6 New design Frigates (FFX)
- 13 Mine Countermeasures Vehicles (MCM)
- 10 Ocean Surveillance Ships (AGOS)
- 7 "AO 187" class Oilers (AO)
- 8 "AKR 14" class Vehicle Cargo Ships (AKR) (for Rapid Deployment Force)
- 5 "ARS 50" class Salvage Ships (ARS)
- 1 "ARC 7" class Cable Repairing Ship (ARC)

Conversions/Acquisitions*
- 1 Cargo Ship (FBM support) (AK)
- 1 Combat Stores Ship (AFS) (purchase of RFA *Lyness* from the Royal Navy)
- 4 Vehicle Cargo Ships (AKR) for the Rapid Deployment Force (purchase of "Maine" class)
- 8 Vehicle Cargo Ships (AKR) for the Rapid Deployment Force (purchase of "SL-7" class)
- 1 Hospital Ship (AH) for the Rapid Deployment Force (liner SS *United States*)
- 2 Surveying Ships (FBM support) (AGS)

Reagan Administration Planned Five Year Shipbuilding/Conversion Programme (Fiscal Year 1982-86)
All types listed official; numbers unknown except where indicated. A full Reagan five year plan will be published with the FY 1983 budget

Shipbuilding**
- 2 "Nimitz" class Multi-purpose Aircraft Carriers (CVN)
- ? "Ohio" class Fleet Ballistic Missile Submarines (SSBN)
- 21 "Ticonderoga" class Guided Missile Cruisers (CG)
- ? "CGN 42" class Guided Missile Cruisers (nuclear propulsion) (CGN)
- ? New design Guided Missile Destroyer (DDGX)
- ? "Spruance" class Destroyers (DD)
- ? "Oliver Hazard Perry" class Guided Missile Frigates (FFG)
- ? "Tarawa" class Amphibious Assault Ship (general purpose) (LHA)
- ? Amphibious Assault Ship Dock (LHDX)
- ? "LSD 41" class Dock Landing Ships (LSD)
- ? Mine Countermeasures Vehicles (MCM)
- ? Amphibious Air-Cushion Vehicles (LCAC)
- ? Minesweepers/Hunters (MSH)
- ? "Sacramento" class Fast Combat Support Ships (AOE)
- ? Ammunition Ships (AE)
- ? "Yellowstone" class Destroyer Tenders (AD)
- 5 "ARS 50" Salvage Ships (ARS)
- ? "AO 187" class Oilers (AO)
- 1 "ARC 7" class Cable Repairing Ship (ARC)
- ? "AGOS 1" class Ocean Surveillance Ships (AGOS)
- ? "AKR 14" class Vehicle Cargo Ships (AKR) (for the Rapid Deployment Force)

Conversions/Acquisitions**
- ? "Virginia" class Guided Missile Cruisers (nuclear propulsion) (CGN)
- 1 Hospital Ship (AH) (for the Rapid Deployment Force) (ex-SS *United States*)
- 2 Combat Stores Ships (AFS) (purchase of RFA *Lyness* and *Tarbatness* from Royal Navy)
- 2 Surveying Ships (FBM support) (AGS)
- 1 Cargo Ship (FBM support) (AK)
- ? Purchase of merchant "LashI" type ship
- 8 "SL-7" class container-ships for the Rapid Deployment Force (purchase from Sea-Land)
- 8 Convert "SL-7" class container-ships to military Vehicle Cargo Ships (AKR) for the Rapid Deployment Force
- 4 Vehicle Cargo Ships (AKR) for the Rapid Deployment Force/General Cargo Hauling (purchase of "Maine" class)

Reactivations**
- 4 "Iowa" class Battleships (BB)
- 1 "Hancock" class Multi-purpose Aircraft Carrier (CV) (reactivation of *Oriskany*, CV 34)

Approved Carter Administration Fiscal Year 1981 Programme

Shipbuilding*	**Appropriations($)*****
1 "Ohio" class SSBN (SSBN 734)	1 089·7
2 "Los Angeles" class SSNs (SSN 723/724)	1 013·5
2 "Ticonderoga" class CGs (CG 49/50)	1 769·5
6 "Oliver Hazard Perry" class FFGs (FFG 50/55)	1 510·0
1 "LSD 41" class LSD (LSD 41)	417·7
5 "AGOS 1" class AGOSs (AGOS 4/8)	180·8
1 "ARS 50" class ARS (ARS 50)	93·0
Conversion/Acquisitions**	
1 Cargo Ship (FBM support) (AK 286)	45·3
1 Purchase of "Maine" class Vehicle Cargo Ship (AKR 10)	93·1
8 "SL-7" class container-ships for the Rapid Deployment Force (purchase from Sea-Land)	285·0
Advanced procurement*	
2 "Los Angeles" class SSNs	188·8
1 "Ohio" class SSBN	38·0
1 Aircraft Carrier Service Life Extension Program (SLEP) (CV 59)	81·0
1 "Ticonderoga" class Guided Missile Cruiser (CG)	131·0
1 "LSD 41" class LSD	47·0
1 "AKR 14" class AKR (AKR 14)	33·0

Proposed Reagan Administration Fiscal Year 1981 Supplemental Programme
Only changes are indicated; number and appropriation differences are in parenthesis

Shipbuilding**	**Appropriations($)*****
2 "Ticonderoga" class CGs (CG 49/50)	1 918·9(+149·0)
2 "Los Angeles" class SSNs (SSN 723/724)	1 009·4(−4·1)
1 "Ohio" class SSBN (SSBN 734)	1 064·0(−25·7)
6 "Oliver Hazard Perry" class FFGs (FFG 50/55)	1 507·2(−2·8)
1 "ARS 50" class ARS (ARS 50)	92·1(−0·9)
5 "AGOS 1" class AGOSs (AGOS 4/8)	178·7(−1·3)
Acquisitions/Conversion**	
6(−2) "SL-7" class container-ships for the Rapid Deployment Force (purchase from Sea-Land)	257·4(−27·6)
Advance procurements**	
1 "AKR 14" class AKR (AKR 14)	53·0(+20·0)
1 Purchase of "Maine" class AKR (AKR 10)	7·6(+7·6)
1 Reactivation of *Oriskany*, CV 34, "Hancock" class	139·0(+139·0)
1 Reactivation of *New Jersey*, BB 62, "Iowa" class	91·0(+91·0)
1 Reactivation of *Iowa*, BB 61, "Iowa" class	1·0(+1·0)

Summary of Total Proposed Reagan Administration Changes to the FY 1981 Budget

Shipbuilding**
No change in numbers; plus $114·2 million

Conversion/Acquisitions**
−2 "SL-7" class; minus $27·2 million

Advance Procurements**
+3 reactivations; plus $257·6 million

Total: Plus 1 ship; plus $344·6 million

Proposed Carter Administration Fiscal Year 1982 Programme

Shipbuilding*	**Appropriations($)*****
2 "Ticonderoga" class CGs (CG 51/52)	2 136·4
1 "Ohio" class SSBN (SSBN 735)	1 300·0
1 "Los Angeles" class SSN (SSN 725)	576·7
1 "Oliver Hazard Perry" class FFG (FFG 56)	498·9
2 "ARS 50" class ARSs (ARS 51/52)	160·6
3 Amphibious Air-Cushion Vehicles (LACV)	76·1
4 "AGOS 1" class AGOSs (AGOS 9/12)	159·0
1 "AO 187" class Oiler (AO)	208·8
1 Mine Countermeasures Vehicle (MCM)	100·6
1 "AKR 14" class Vehicle Cargo Ship (AKR 14)	195·0
Conversions/Acquisitions*	
2 Conversions of "SL-7" class container-ships to Vehicle Cargo Ships (AKR)	216·4
1 Combat Stores Ship (AFS) (purchase of RFA *Lyness* from Royal Navy)	20·0
1 "Maine" class Vehicle Cargo Ship (AKR) (purchase)	93·9
Advanced procurement*	
1 Aircraft Carrier Service Life Extension Program (SLEP) (CV 59)	114·2
1 Hospital Ship (AH) conversion for Rapid Deployment Force (ex-SS *United States*)	10·0

Proposed Reagan Administration Amendment to the Carter Fiscal Year 1982 Programme
Only changes are indicated; number and appropriation differences are in parenthesis

Shipbuilding**		
3(+1)	"Ticonderoga" class CGs (CG 51/53)	2 946·3(+809·9)
3(+2)	"Oliver Hazard Perry" class FFGs (FFG 56/59)	971·9(+473·0)
2(+1)	"Los Angeles" class SSN (SSN 725 plus one)	1 227·0(+650·3)
1	"Ohio" class SSBN (SSBN 735)	1 291·5(−38·2)
1	Mine Countermeasures Vehicle (MCM)	99·7(−0·9)
4	"AGOS 1" class AGOSs (AGOS 9/12)	156·5(−2·5)
1	"AO 187" class Oiler (AO)	200·0(−4·0)
Conversions/Acquisitions**		
2(+1)	Combat Stores Ships (purchase of RFA *Lyness* and *Tarbatness* from the Royal Navy)	37·0(+17·0)
2(+1)	"Maine" class Vehicle Cargo Ships (AKR 11 and 12) (purchase)	197(+103·1)
2(+2)	"SL-7" class container-ships for Rapid Deployment Force (purchase)	682·4(+466·0)
6	Conversions "SL-7" class container-ships to Vehicle Cargo Ships (AKR)	
Reactivations**		
1(+1)	Multi-purpose Aircraft Carrier of the "Hancock" class (*Oriskany* CV 34)	364·0(+364·0)
1(+1)	Battleship of "Iowa" class (*New Jersey*, BB 62)	160·0(+160·0)

Advanced procurements**

1(+1) "Nimitz" class CVN (CVN 72)	658·0(+658·0)
1(+1) "LSD 41" class LSD (LSD 42)	34·0(+34·0)
1(+1) Reactivation of an "Iowa" class Battleship *(Iowa,* BB 61*)*	91·0(+91·0)

Summary of Total Proposed Reagan Administration Changes to the FY 1982 Budget

Shipbuilding**
Plus 4 ships; plus $1 887·6 million

Conversions/Acquisitions**
Plus 4 ships; plus $586·1 million

Reactivations**
Plus 3 ships; plus $524 million

Advanced Procurements**
Plus 3 ships; plus $783 million

Total: Plus 14 ships; plus $3 780·7 million

Notes: * As of 15 January 1981; ** As of 10 March 1981; *** Amount in millions of $US

Naval Aviation

US Naval Aviation currently consists of approx 7 000 aircraft flown by the Navy and Marine Corps. The principal naval aviation organisations are 12 carrier air wings, 24 maritime reconnaissance/patrol squadrons, and three marine aircraft wings. In addition, the Naval Reserve and Marine Corps Reserve operate 7 fighter squadrons, 11 attack squadrons, and 12 patrol squadrons, plus various reconnaissance, electrical warfare, tanker, helicopter and transport units.

Fighter: 26 Navy squadrons with F-4 Phantom and F-14 Tomcat aircraft; 12 Marine squadrons with F-4 Phantoms.
Attack: 39 Navy squadrons with A-6 Intruder and A-7 Corsair aircraft; 13 Marine squadrons with A-4 Skyhawk, A-6 Intruder, AV-8 Harrier aircraft.
Reconnaissance: 10 Navy squadrons with RA-5C Vigilante and RF-8G Crusader aircraft; 3 Marine squadrons with RF-4B Phantoms.
Airborne Early Warning: 12 Navy squadrons with E-2 Hawkeye aircraft.
Electronic Warfare: 8 Navy squadrons with EA-6B Prowler aircraft (Marines operate EA-6A Intruder aircraft in composite reconnaissance squadrons).
Anti-Submarine: 11 Navy squadrons with S-3 Viking aircraft replacing S-2 Trackers.
Maritime Patrol: 24 Navy squadrons with P-3 Orion aircraft.
Helicopter Anti-Submarine: 17 Navy squadrons with SH-3 Sea King and SH-2 LAMPS helicopters.
Helicopter Mine Countermeasures: 1 Navy squadron with RH-53 Sea Stallion.
Helicopter Support: 4 Navy squadrons with UH-46 Sea Knight helicopters.
Electronic Reconnaissance: 2 Navy squadrons with EP-3E Orion and EC-121 Warning Star aircraft.
Communications Relay: 2 Navy squadrons with EC-130 Hercules aircraft.
Observation: 3 Marine squadrons with OV-10 Bronco aircraft.
Helicopter Gunship: 3 Marine squadrons with AH-1 Sea Cobra helicopters.
Helicopter Transport: 21 Marine squadrons with UH-1 Iroquois (Huey), CH-46 Sea Knight, and CH-53 Sea Stallion helicopters.

Bases

Naval Air Stations and Air Facilities (44)

NAS Alameda, Calif; NAF China Lake, Calif; NAF El Centro, Calif; NAS Los Alamitos, Calif; NAS Mirimar, Calif; NAS Moffett Field (San Jose), Calif; NAS Point Mugu, Calif; NAS North Island (San Diego), Calif; NAF Andrews, Washington DC; NAS Cecil Field (Pensacola), Fla; NAS Jacksonville, Fla; NAS Key West, Fla; NAS Whiting Field (Milton), Fla; NAS Saufley Field (Pensacola), Fla; NAS Pansacola, Fla; NAS Atlanta (Marietta), Ga; NAS Glenview, Ill; NAS Barbers Point (Oahu), Hawaii; NAS New Orleans, La; NAS Brunswick, Me; NAS Paxtuxent River, Md; NAS South Weymouth, Mass; NAF Detroit, Mich; NAS Meridan, Miss; NAS Fallon, Nev; NAS Lakehurst, NJ; NAF Warminster, Penna; NAS Willow Grove, Penna; NAS Memphis (Millington), Tenn; NAS Chase Field (Beeville), Texas; NAS Corpus Christi, Texas; NAS Dallas, Texas; NAS Kingsville, Texas; NAS Norfolk, Va; NAS Whidbey Island (Oak Harbor), Wash; NAF Lajes, Azores; NAS Bermuda; NAS Guantanamo Bay, Cuba; NAF Naples, Italy; NAF Atsugi, Japan; NAS Agana, Guam; NAF Okinawa; NAS Subic Bay, Philippines; NAF Mildenhall (Suffolk), England.

Naval Stations and Naval Bases (25)

Yokosuka, Japan; Subic Bay, Philippines; Apra Harbour, Guam; Midway Is; Adak, Alaska; Pearl Harbor, Hawaii; Treasure Is, San Francisco, Calif; San Diego, Calif; Coronado, San Diego, Calif (Amphibs); Long Beach, Calif; Mayport, Fla; Roosevelt Roads, Puerto Rico; Guantanamo Bay, Cuba; Charleston, SC; Norfolk, Va; Little Creek, Norfolk, Va (Amphibs); Philadelphia, Pa; Brooklyn, NY; New London, Conn (Submarines); Newport, RI; Boston, Mass; Argentia, Newfoundland; Keflavik, Iceland; Rota, Spain; Naples, Italy.

Strategic Missile Submarine Bases (5)

Holy Loch, Scotland; Apra Harbour, Guam; Charleston, SC; Bangor, Wash (West Coast Trident base); Kings Bay, Ga (East Coast Trident base)

Navy Yard (1)

Washington, DC (administration and historical activities only).

Naval Shipyards (7)

Pearl Harbor, Hawaii; Puget Sound, Bremerton, Wash; Mare Is, Vallejo, Calif; Charleston, SC; Norfolk, Va; Philadelphia, Pa; Portsmouth, NH (located in Kittery, Me).

Naval Ship Repair Facilities (2)

Subic Bay, Philippines; Yokosuka, Japan.

Marine Air Stations and Air Facilities (7)

El Toro (Santa Ana), Calif; Kaneohe Bay (Oahu), Hawaii; Cherry Point, NC; New River (Jacksonville), Fla; Quantico, Va; Iwakuni, Japan; Futema, Okinawa, Japan.

Marine Corps Bases (5)

Camp Pendleton, Calif; Twentynine Palms, Calif; Camp H.M. Smith (Oahu), Hawaii; Camp Lejeune, NC; Camp Smedley D. Butler (Kawasaki), Okinawa, Japan.

CLASSIFICATION OF NAVAL SHIPS AND SERVICE CRAFT

The following is the official US Navy list of classifications of naval ships and service craft as promulgated by the Secretary of the Navy on 5 November 1979 and periodically amended. In the main text of this section the use of an "E" before a classification indicates that the ship or craft is experimental in nature, the use of a "T" indicates that the ship or craft is assigned to the Military Sealift Command and is civilian manned. In either case the letters "E" and "T" are not an official part of the ship classification and are not listed here.
From time to time classifications, such as CVV, appear which are not an official classification. These classifications indicate new ship types which were developed after the last official list was published. They are usually added to the list by change or revision. Some classifications listed below are no longer employed in the US Navy, but are retained because the classification is still in official use in correspondence, notices, etc and/or are still on the Naval Vessel Register (NVR) in some other capacity than as a US Naval Ship. In some cases, there are no more ships of the type in any capacity. Examples are MSC, MCS, LSIL. The letter "X" is often added to existing classifications, such as FFGX and ARX, to indicate a new class whose characteristics have not been defined.

COMBATANT SHIPS CATEGORY

Warship Classification

Aircraft Carrier Type	
CTOL (Conventional Take Off and Landing Aircraft Carrier)	
Multi-purpose Aircraft Carrier	CV
Multi-purpose Aircraft Carrier (nuclear propulsion)	CVN
ASW Aircraft Carrier	CVS
(Attack Aircraft Carrier)	(CVA)*
Surface Combatant Type	
Battleships	
Battleship	BB
Cruisers	
Gun Cruiser	CA
Guided Missile Cruiser	CG
Guided Missile Cruiser (nuclear propulsion)	CGN
Destroyers	
Destroyer	DD
Guided Missile Destroyer	DDG
Frigates	
Frigate	FF
Guided Missile Frigate	FFG
Submarine Type	
Attack Submarines	
Submarine (conventionally-powered)	SS
Guided Missile Submarine (conventionally-powered)	SSG
Submarine (nuclear-powered)	SSN
Ballistic Missile Submarines	
Ballistic Missile Submarine (nuclear-powered)	SSBN
Auxiliary Submarine	
Auxiliary Submarine	SSAG

Other Combatant Classification

Patrol Combatant Type	
Patrol Ships	
Patrol Combatant	PG
Guided Missile Patrol Combatant (hydrofoil)	PHM
Amphibious Warfare Type Ships	
Amphibious Helicopter/Landing Craft Carriers	
Amphibious Assault Ship (general purpose)	LHA
Amphibious Assault Ship (helicopter)	LPH
Amphibious Transport Dock	LPD
Landing Craft Carriers	
Amphibious Cargo Ship	LKA
Amphibious Transport	LPA
Dock Landing Ship	LSD
Tank Landing Ship	LST
Miscellaneous	
Amphibious Command Ship	LCC
Mine Warfare Type Ships	
Minesweepers	
Minesweeper, Ocean (non-magnetic)	MSO
Mine Countermeasures Ships	
Mine Countermeasures Vehicles	MCM

AUXILIARY SHIPS CATEGORY

Auxiliary Classification

Mobile Logistic Type Ships	
Underway Replenishment	
Ammunition Ship	AE
Store Ship	AF
Combat Store Ship	AFS
Oiler	AO
Fast Combat Support Ship	AOE
Replenishment Oiler	AOR
Material Support	
Destroyer Tender	AD
Repair Ship	AR
Submarine Tender	AS
Support Type Ships	
Fleet Support	
Salvage Ship	ARS
Submarine Rescue Ship	ASR
Auxiliary Ocean Tug	ATA
Fleet Ocean Tug	ATF
Salvage and Rescue Ship	ATS
Other Auxiliaries	
Miscellaneous	AG
Deep Submergence Support Ship	AGDS
Hydrofoil Research Ship	AGEH
Miscellaneous Command Ship	AGF
Frigate Research Ship	AGFF
Missile Range Instrumentation Ship	AGM
Oceanographic Research Ship	AGOR
Ocean Surveillance Ship	AGOS
Surveying Ship	AGS
Auxiliary Research Submarine	AGSS
Hospital Ship	AH
Cargo Ship	AK
Vehicle Cargo Ship	AKR
Gasoline Tanker	AOG
Transport Oiler	AOT
Transport	AP
Self-propelled Barracks Ship	APB
Cable Repairing Ship	ARC
Repair Ship, Small	ARL
Guided Missile Ship	AVM
Auxiliary Aircraft Landing Training Ship	AVT

COMBATANT CRAFT CATEGORY

Combatant Craft Classification

Patrol Type Craft	
Coastal Patrol Combatants	
Patrol Boat	PB
Patrol Craft (fast)	PCF
Patrol Craft (hydrofoil)	PCH
Fast Patrol Craft	PTF
Patrol Gunboat (hydrofoil)	PGH
River/Roadstead Craft	
Mini-Armoured Troop Carrier	ATC
River Patrol Boat	PBR
Amphibious Warfare Type Craft	
Landing Craft	
Amphibious Assault Landing Craft	AALC
Landing Craft, Air Cushion	LCAC
Landing Craft, Mechanised	LCM
Landing Craft, Personnel, Large	LCPL
Landing Craft, Personnel, Ramped	LCPR
Landing Craft, Utility	LCU
Landing Craft, Vehicle, Personnel	LCVP
Amphibious Warping Tug	LWT
Special Warfare Craft	
Light Seal Support Craft	LSSC
Medium Seal Support Craft	MSSC
Swimmer Delivery Vehicle	SDV
Special Warfare Craft, Light	SWCL
Special Warfare Craft, Medium	SWCM
Mine Warfare Type Craft	
Mine Countermeasures Craft	
Minesweeping Boat	MSB
Minesweeping, Drone	MSD
Minesweeper, Inshore	MSI
Minesweeper, River (converted LCM-6)	MSM
Minesweeper, Patrol	MSR

SUPPORT CRAFT CATEGORY

Support Craft Classification (Non self-propelled craft are indicated)

Service Craft Type	
Drydocks	
Large Auxiliary Floating Dry Dock (non self-propelled)	AFDB
Small Auxiliary Floating Dry Dock (non self-propelled)	AFDL
Medium Auxiliary Floating Dry Dock (non self-propelled)	AFDM
Auxiliary Repair Dry Dock (non self-propelled)	ARD
Medium Auxiliary Repair Dry Dock (non self-propelled)	ARDM
Bowdock	YBD
Yard Floating Dry Dock (non self-propelled)	YFD
Tugs	
Large Harbour Tug	YTB
Small Harbour Tug	YTL
Medium Harbour Tug	YTM
Tankers	
Fuel Oil Barge	YO
Gasoline Barge	YOG
Water Barge	YW
Lighters	
Open Lighter (non self-propelled)	YC
Car Float (non self-propelled)	YCF
Aircraft Transportation Lighter (non self-propelled)	YCV
Covered Lighter	YF
Covered Lighter	YFN
Large Covered Lighter (non self-propelled)	YFNB
Lighter (special purpose) (non self-propelled)	YFNX
Refrigerated Covered Lighter	YFR
Refrigerated Covered Lighter (non self-propelled)	YFRN

Service Craft Type

Harbour Utility Craft	YFU
Garbage Lighter	YG
Garbage Lighter (non-self-propelled)	YGN
Gasoline Barge (non self-propelled)	YOGN
Fuel Oil Barge (non self-propelled)	YON
Oil Storage Barge (non self-propelled)	YOS
Floating Dry Dock Workshop (Hull)	YRDH
Floating Dry Dock Workshop (Machine)	YRDM
Radiological Repair Barge (non self-propelled)	YRR
Salvage Craft Tender (non self-propelled)	YRST
Seaplane Wrecking Derrick	YSD
Sludge Removal Barge (non self-propelled)	YSR
Water Barge (non self-propelled)	YWN
Miscellaneous	
Barracks Craft (non self-propelled)	APL
Deep Submergence Rescue Vehicle	DSRV
Deep Submergence Vehicle	DSV
Unclassified Miscellaneous (self and non self-propelled)	IX
Submersible Research Vehicle	NR
Miscellaneous Auxiliary	YAG
Floating Crane (non self-propelled)	YD
Diving Tender (non self-propelled)	YDT
Ferry Boat or Launch	YFB
Dry Dock Companion Craft (non self-propelled)	YFND
Floating Power Barge (non self-propelled)	YFP
Covered Lighter (Range Tender)	YFRT
Salvage Lift Craft, Heavy (non self-propelled)	YHLC
Dredge	YM
Salvage Lift Craft, Medium (non self-propelled)	YMLC
Gate Craft (non self-propelled)	YNG
Patrol Craft	YP
Floating Pile Driver (non self-propelled)	YPD
Floating Workshop (non self-propelled)	YR
Repair and Berthing Barge (non self-propelled)	YRB
Repair, Berthing and Messing Barge (non self-propelled)	YRBM

*Classification not or no longer official but included in this list because of usage in the US section text.

Electronic Equipment Classification

The "AN" nomenclature was designed so that a common designation could be used for Army, Navy and Air Force equipment. The system indicator "AN" does not mean that the Army, Navy and Air Force use the equipment, but means that the type number was assigned in the "AN" system.

"AN" nomenclature is assigned to complete sets of equipment and major components of military design; groups of articles of either commercial or military design which are grouped for military purposes; major articles of military design which are not part of or used with a set; and commercial articles when nomenclature will not facilitate military identification and/or procedures.

"AN" nomenclature is not assigned to articles catalogued commercially except as stated above; minor components of military design which other adequate means of identification are available; small parts such as capacitors and resistors; and articles having other adequate identification in joint military specifications. Nomenclature assignments remain unchanged regardless of later installation and/or application.

Installation

A Airborne (installed and operated in aircraft).
B Underwater mobile, submarine.
C Air transportable (inactivated, do not use).
D Pilotless carrier.
F Fixed.
G Ground, general ground use (includes two or more ground-type installations).
K Amphibious.
M Ground, mobile (installed as operating unit in a vehicle which has no function other than transporting the equipment).
P Pack or portable (animal or man).
S Water surface craft.
T Ground, transportable.
U General utility (includes two or more general installation classes, airborne, shipboard, and ground).
V Ground, vehicular (installed in vehicle designed for functions other than carrying electronic equipment, etc, such as tanks).
W Water surface and underwater.

Type of Equipment

A Invisible light, heat radiation.
B Pigeon.
C Carrier.
D Radiac.
E Nupac.
F Photographic.[1]
G Telegraph or teletype.
I Interphone and public address.
J Electromechanical or inertial wire covered.
K Telemetering.
L Countermeasures.
M Meteorological.
N Sound in air.
P Radar.
Q Sonar and underwater sound.
R Radio.
S Special types, magnetic, etc, or combinations of types.
T Telephone (wire).
V Visual and visible light.
W Armament (peculiar to armament, not otherwise covered).
X Facsimile or television.
Y Data processing.

Purpose

A Auxiliary assemblies (not complete operating sets used with or part of two or more sets or sets series).
B Bombing.
C Communications (receiving and transmitting).
D Direction finder, reconnaissance and/or surveillance.
E Ejection and/or release.
G Fire-control or searchlight directing.
H Recording and/or reproducing (graphic meteorological and sound).
K Computing.
L Searchlight control (inactivated, use G).
M Maintenance and test assemblies (including tools).
N Navigational aids (including altimeters, beacons, compasses, racons, depth sounding, approach, and landing).
P Reproducing (inactivated, do not use).
Q Special, or combination of purposes.
R Receiving, passive detecting.
S Detecting and/or range and bearing, search.
T Transmitting.
W Automatic flight or remote control.
X Identification and recognition.

1. Not for US use except for assigning suffix letters to previously nomenclatured items.

Example: AN/URD-4A. AN: "AN" System; U: General Utility; R: Radio; D: Direction Finder, Reconnaissance, and/or Surveillance; 4: Model Number; A: Modification Letter.

Mercantile Marine

Lloyd's Register of Shipping:
5 088 vessels of 17 542 220 tons gross

Classification Of Maritime Administration Ship Designs

The US Maritime Administration is a Division of the US Department of Commerce. All US flag merchant vessels are built under the jurisdiction of the US Maritime Administration and are assigned Maritime Administration design classifications. These classifications consist of three groups of letters and numbers.

A number of US Naval Auxiliaries were originally built to Maritime Administration specifications and were acquired during construction or after the ship was completed. It should be noted that the Maritime Administration acts as a "ship broker" for the US government and does not build ships for itself. The Maritime Administration generally oversees the operation and administration of the US Merchant Marine.

Merchant Ship Design Classifications

Type and length of vessel

		Length in Feet at Load Water Line			
Type		*1*	*2*	*3*	*4*
C	Cargo	Under 400	400-450	450-500	500-550
P	Passenger	Under 500	500-600	600-700	700-800
N	Coastal Cargo	Under 200	200-250	250-300	300-350
R	Refrigerated Cargo	Under 400	400-450	450-500	500-550
S	Special (Navy)	Under 200	200-300	300-400	400-500
T	Tanker	Under 450	450-500	500-550	550-600

Type of propulsion; number of propellers and passengers

	Single Screw		*Twin Screw*	
Power	*1/12 Passengers*	*13+ Passengers*	*1/12 Passengers*	*13+ Passengers*
Steam	S	S1	ST	S2
Motor (Diesel)	M	M1	MT	M2
Turbo-Electric	SE	SE1	SET	SE2

Example: C4-S-B1. C4: Cargo Ship between 500 and 550 ft long; S: steam powered; B1: 1st variation ("1") of the original design ("B"). If the third group of letters and numbers read BV1 instead of B1, the translation of the code would be, the 1st variation ("1") of the 22nd modification ("V") of the original design ("B").

Major Commercial Shipyards

Avondale Shipyards, Inc, New Orleans, Louisiana
Bath Iron Works Corp, Bath, Maine
Bethlehem Steel Corp, Sparrows Point, Maryland
General Dynamics Corp, Electric Boat Division, Groton, Connecticut (formerly Electric Boat Company)
General Dynamics Corp, Quincy Shipbuilding Division, Quincy, Massachusetts (formerly Bethlehem Steel Corp Shipyard)
Ingalls Shipbuilding Division (Litton Industries), Pascagoula, Mississippi
Lockheed Shipbuilding & Construction Co, Seattle, Washington
National Steel & Shipbuilding Co, San Diego, California
Newport News Shipbuilding & Dry Dock Co, Newport News, Virginia
Todd Shipyards Corp, San Pedro, California
Todd Shipyards Corp, Seattle, Washington

Note: All of the above yards have engaged in naval shipbuilding, overhaul, or modernisation except for the General Dynamics/Electric Boat yard which is engaged only in submarine work.

Shipboard Systems

AEGIS (formerly Advanced Surface Missile System). Advanced surface-to-air missile system intended for use in guided missile destroyer (DDG 47 class) and cruisers (CGN 42 class) scheduled for delivery during the 1980s. To have a capability against high-performance aircraft and air, surface and sub-surface launched, anti-ship missiles. Launcher is Mk 26. AEGIS will have an electronic scanning radar with fixed antenna which will be capable of controlling friendly aircraft as well as surveillance, detection and tracking. Elements will include the AN/UYK-7 computer and illuminators for missile guidance for use with Standard surface-to-air missile.
Status: Development.

ASROC (Anti-Submarine Rocket). Anti-submarine weapon launched from surface ships with homing torpedo or nuclear depth charge as warhead. Launcher is Mk 10 or Mk 26 combination ASROC/surface-to-air missile launcher or Mk 16 eight-cell "pepper box". Installed in US Navy cruisers, destroyers, and frigates; Japanese, Italian, West German, and Canadian destroyer-type ships.
Weight of missile approximately 1 000 lb; length 15 ft; diameter 1 ft; span of fins 2·5 ft. Payload: Mk 44 or Mk 46 acoustic-homing torpedo or nuclear depth charge; range one to six miles.
Designation: RUR-5.
Status: Operational.

BPDMS (Basic Point Defence Missile System). Close-in-air-defence system employing the Sparrow AIM-7E or 7F series missile designated Sea Sparrow and a modified ASROC-type "pepper box" launcher. Installed in aircraft carriers, ocean escorts, and amphibious ships.
Status: Operational.

CAPTOR (Encapsulated Torpedo). Mk 46 torpedo inserted in mine casing. To be launched by aircraft or submarine.

CIWS (Close-in Weapon System). "Family" of advanced gun and missile systems to provide close-in or "point" defence for ships against anti-ship missiles and aircraft. Specific weapons being developed, evaluated or in service under this programme include the Chaparral, Hybrid launcher, Pintle, Vulcan Air Defence, Phalanx, and OTO Melara 35 mm twin gun mount.

LAMPS (Light Airborne Multi-Purpose System). Ship-launched helicopter intended for anti-submarine and missile-defence missions, with secondary roles of search-and-rescue and utility (eg, parts and personnel transfer). For use aboard destroyer-type ships with hangars. Sensors include Magnetic Airborne Detection (MAD), and sonobuoys with digital relays to permit control and attack direction by launching ship. Radar provided to extend detection range. Weapons: 2 Mk 46 ASW torpedoes. Crew: pilot, co-pilot, one operator.
Status: 105 Kaman Seasprite helicopters being modified to SH-2 configuration as interim LAMPS. Deployed in cruisers, destroyers, and frigates.

LAMPS III Improved Light Airborne Multi-Purpose System based on Army Utility Tactical Transport Aircraft System (UTTAS) helicopter.
Status: Development.

MCLWG (Major Calibre Light-Weight Gun). Light-weight 8-in gun (Mk 71) planned for advanced surface combatants.
Status: Evaluation in destroyer *Hull* (DD 945)—production unlikely due to high cost.

NTDS (Naval Tactical Data System). Combination of digital computers, displays, and transmission links to increase an individual ship commander's capability to assess tactical data and take action by integrating input from various sensors (eg, radars) and providing display of tactical situation and the defence or offence options available. Data can be transmitted among NTDS-equipped ships. An automatic mode initiates action to respond to greatest threats in a tactical situation. Also can be linked to airborne Tactical Data System (ATDS) in E-2 Hawkeye aircraft. Fitted in US Navy aircraft carriers, missile-armed cruisers, destroyers ("Coontz" class), amphibious command ships, and some frigates.
Status: Operational.

NATO SEA SPARROW Follow-on to BPDMS with a Target Acquisition System (TAS), powered director, smaller launcher, and control console combined with the Sea Sparrow missile. Planned for US amphibious and auxiliary ships.
Status: Under development; also a NATO co-operative programme with Belgium, Denmark, Italy, Netherlands and Norway. Being evaluated in *Downes* (FF 1070).

PHALANX Rapid-fire, close-in gun system being developed to provide close range defence against anti-ship missiles. Fires 20 mm ammunition from six-barrel "gatling" gun with "dynamic gun aiming" with fire control radar tracking projectiles and target(s). Theoretical rate of fire 3 000 rounds-per-minute. Initially planned for "Spruance" class destroyers, frigates, and some auxiliary ships; tentative programme calls for approx 359 units in 192 ships and three trainers.
Status: Operational.
Average cost for installation: $100 000 (new construction), $150 000 (retrofitting).

QUICKSTRIKE Advanced mine system; details classified.
Status: Development.

SINS (Ships' Inertial Navigation System). Navigation system providing exact navigation information without active input from terrestrial sources. Prime components are gyroscopes and accelerometers that relate movement of the ship in all directions, ship speed through water and over the ground, and true north to give a continuous report of the ship's position.
Status: Operational.

SIRCS (Shipboard Intermediate Range Combat System). Programme to integrate shipboard self-defence systems (existing and planned).
Status: Development.

SUBROC (Submarine Rocket). Anti-submarine missile launched from submarines with nuclear warhead. Launched from 21 in torpedo tube. Carried in US Navy submarines of "Thresher" and later classes with amidships torpedo tubes, BQQ 2 or BQQ 5 sonar and Mk 113 or later torpedo fire control systems. The missile is fired from the submerged submarine, rises up through the surface, travels through air towards the hostile submarine, and then re-enters the water to detonate.
Weight of missile approximately 4 000 lb, length 21 ft; diameter 1·75 ft (maximum); estimated range 25 to 30 miles.
Designation: UUM-44.
Status: Operational.

TACTAS (Tactical Towed Array Sonar). Ship-towed long-range acoustic detection system.

TOMAHAWK A cruise missile which can be launched by both submarines and surface ships (SLCM version).

Torpedoes

Designation	*Launch platform*	*Length feet (metres)*	*Weight lb (kg)*	*Diameter, in (mm)*	*Propulsion*	*Guidance*	*Notes*
Mk 37 Mod 2	Submarines	13·4 *(4·1)*	1 690 *(766·6)*	19 *(482·6)*	Electric	Wire; active-passive acoustic homing	Anti-submarine
Mk 37 Mod 3	Submarines	11·25 *(3·4)*	1 430 *(648·6)*	19 *(482·6)*	Electric	Active-passive acoustic homing	Anti-submarine
Mk 37C	Submarines				Liquid mono-propellant	Active-passive acoustic homing	Anti-submarine; modified Mk 37-2/3 for allied navies
Mk 44 Mod 1	Surface ships (Mk 32 tubes and ASROC); aircraft	8·4 *(2·6)*	433 *(196·4)*	12·75 *(323·9)*	Electric	Active acoustic homing	Anti-submarine
Mk 45 Mod 1 & Mod 2 (ASTOR)	Submarines	18·9 *(5·8)*	2 213 *(1 003·8)*	19 *(482·6)*	Electric	Wire	Anti-submarine; nuclear warhead; 10+ mile range; being replaced by Mk 48
Mk 46 Mod 0	Surface ships (Mk 32 tubes and ASROC); aircraft	8·5 *(2·6)*	568 *(257·6)*	12·75 *(323·9)*	Solid-propellant	Active-passive acoustic homing	Anti-submarine; successor to Mk 44
Mk 46 Mod 1 & Mod 2	Surface ships (Mk 32 tubes and ASROC); aircraft	8·5 *(2·6)*	508 *(230·4)*	12·75 *(323·9)*	Liquid mono-propellant	Active-passive acoustic homing	Anti-submarine; successor to Mk 44; Mod 4 used in CAPTOR (Encapsulated Torpedo) mine
Mk 48 Mod 1 & Mod 3	Submarines	19·1 *(5·8)*	3 480 *(1 578·5)*	21 *(533·6)*	Liquid mono-propellant	Wire/terminal acoustic homing	Anti-submarine and anti-shipping; range approx 20 miles
ALWT	Aircraft; submarines						Advanced light-weight torpedo; to replace Mk 46; in design stage; in service probably 1987

Naval Missiles

Type(a)	Designation	Name	Launch platform (tubes/launchers)	Range miles (km)	Length feet (metres)	Weight lb (kg)	Notes(b)
SLBM	UGM-27C	Polaris A-3	"Ethan Allen", "George Washington" submarines (16)	2 500 *(4 023)*	32 *(9·8)*	30 000 *(13 608)*	Thermo-nuclear; MRV warhead (To phase out by FY 1982)
SLBM	UGM-73A	Poseidon C-3	"Lafayette" submarines (16)	2 880 *(4 634·9)*	34 *(10·4)*	65 000 *(29 484)*	Thermo-nuclear; MIRV warhead
SLBM	UGM-96A	Trident (I) C-4	"Ohio" submarines (24) "Lafayette" submarines (16)	4 350 *(7 000·6)*	34·1 *(10·4)*	70 000 *(31 752)*	Thermo-nuclear; MIRV and MARV warhead
SLBM	UGM	Trident (II) D-5	Trident submarines (24)	approx 6 000 *(9 656)*	45·75 *(13·9)*	126 000 *(57 153)*	Development
SLCM	BGM-109	Tomahawk	Attack submarines (torpedo tubes) Surface ships (box launchers)	approx 1 500 *(2 414)*	20·5 *(6·3)*	2 400-2 700 *(1 088-1 224)*	Nuclear land attack and 300 mile (HE) anti-ship; under development
SSM	RGM-66D/E	Standard-ARM	Some surface ships (ASROC launcher)	15 *(24·14)*	15 *(4·6)*	1 400 *(635)*	HE
SSM	RGM-84	Harpoon	Surface ships	50 *(80·5)*	15 *(4·6)*	1 470 *(666·1)*	Operational; HE
USM	RGM-84	Encapsulated Harpoon	Attack submarines (torpedo tubes)	60 *(96·6)*	21 *(6·4)*	2 355 *(1 068)*	Operational; HE
SAM	RIM-2	Terrier	Cruisers (1 or 2 twin); "Coontz" destroyers (1 twin); "Kitty Hawk", "America" carriers (2 twin)	20+ *(32·2+)*	26·1 *(8)*	3 000 *(1 361)*	Nuclear or HE
SAM	RIM-7	Sea Sparrow	Surface ships	8 *(12·9)*	12 *(3·7)*	500 *(226·8)*	HE; Mk 25 or Mk 29 (NATO) multiple launcher; Basic Point Defence Missile System
SAM	RIM-24	Tartar	"Albany" cruisers (2 twin); "Charles Adams" destroyers (1 twin or single); "Brooke" frigates (1 single)	10+ *(16·1+)*	15 *(4·6)*	1 425 *(646·4)*	HE
SAM	RIM-66	Standard-MR (SM-1)	Tartar replacement	20+ *(32·2+)*	14·4 *(4·4)*	1 200-1 400 *(546·3-635)*	HE
SAM	RIM-66C	Standard (SM-2)	Talos replacement	60+ *(96·6+)*			Long range with mid-course guidance; operational
SAM	RIM-66C	Standard (SM-2MR)	Aegis	20+ *(32·2+)*	15·5 *(4·7)*	1 568 *(711·2)*	Medium range—development
SAM	RIM-66C	Standard (SM-2N)	Talos replacement				Nuclear warhead armed version of (SM-2) ER/MR series; proposed
SAM	RIM-67	Standard-ER (SM-1)	Terrier replacement	35+ *(56·3+)*	26·2 *(8)*	2 900 *(1 315·4)*	HE
SAM	RIM-67B	Standard (SM-2ER)	Talos replacement	60+ *(96·6+)*	*26·2 (8)*	3 310 *(1 501·3)*	Long range—development
AAM	AIM-7	Sparrow III	F-4/F-14/F-15 fighters	9–16 *(14·5–25·8)*	12 *(3·7)*	500 *(226·8)*	
AAM	AIM-9C/D	Sidewinder-1B	F-4/F-14/F-15/F-16 fighters	8 *(12·9)*	9·5 *(2·9)*	185 *(83·9)*	
AAM	AIM-54	Phoenix	F-14 fighter (6)	60+ *(96·6+)*	13 *(4)*	985 *(446·8)*	
ASM	AGM-12B	Bullpup-A	Attack/patrol aircraft	7 *(11·3)*	10 *(3·1)*	571 *(259)*	
ASM	AGM-12D	Bullpup-B	Attack/patrol aircraft	10 *(16·1)*	13·5 *(4·1)*	1 785 *(809·7)*	Nuclear or HE
ASM	AGM-45	Shrike	Attack/patrol aircraft	8–10 *(12·9–16·1)*	10 *(3·1)*	390 *(176·9)*	Anti-radiation
ASM	AGM-53	Condor	Attack/patrol aircraft	40–60 *(64·4–96·6)*	13·8 *(4·2)*	2 130 *(966·2)*	Nuclear or HE; production planned
ASM	AGM-62	Walleye I	Attack/patrol aircraft	16 *(25·7)*	11·2 *(3·5)*	1 100 *(499)*	Nuclear or HE
ASM	AGM-62	Walleye II	Attack/patrol aircraft	35 *(56·3)*	13·2 *(4)*	2 400 *(1 089)*	Nuclear or HE
ASM	AGM-78	Standard-ARM	Attack/patrol aircraft	35 *(56·3)*	15 *(4·6)*	1 356 *(615·1)*	Anti-radiation
ASM	AGM-83	Bulldog	Attack/patrol aircraft	35 *(56·3)*	9·8 *(3)*	600 *(272·1)*	Modified Bullpup
ASM	AGM-84	Harpoon	Attack/patrol aircraft	120 *(193·1)*	12·6 *(3·8)*	1 168 *(529·8)*	Operational; HE
ASM	AGM-88	Harm	Attack/patrol aircraft		13·7 *(4·2)*	780 *(353·8)*	Development; high-speed anti-radiation missile; larger than Shrike
ASW	RUR-5	ASROC	Cruisers, destroyers, frigates	1–6 *(1·6–9·7)*	15 *(4·6)*	1 000 *(453·6)*	Nuclear depth charge, Mk 44, or Mk 46 torpedo; multiple launcher in most ships; Mk 26 launcher in later ships; 570 lb *(256·5 kg)* with Mk 46
ASW	UUM-44	SUBROC	"Thresher" and later attack submarines (torpedo tubes)	25–30 *(40·2–48·3)*	21 *(6·4)*	4 000 *(1 814·4)*	Nuclear

(a) FBM = Fleet Ballistic Missile; SLCM = Sea-Launched Cruise Missile; SSM = Surface-to-Surface Missile; SAM = Surface-to-Air Missile; AAM = Air-to-Air Missile; ASM = Air-to-Surface Missile; ASW = Anti-Submarine Warfare.
(b) MRV = Multiple Re-entry Vehicle; MIRV = Multiple Independently Targeted Re-entry Vehicle; MARV = Maneouvring Re-entry Vehicle; HE = High Explosive.

Mines

The following mines are currently (1 February 1981) maintained in the US Navy's inventory:

Aircraft Laid

Type	*Designation*	*Firing method*	*Maximum length feet (metres)*	*Maximum width/diameter feet (metres)*	*Maximum depth feet (metres)*	*Weight and type of Explosive charge (lb)*	*Assembled weight (lb)*
Bottom	Mk 52, Mod 1	Acoustic	7·4 *(2·25)*	2·8 *(0·84)* (over fins)	150 *(45·7)*	595/HBX-1	1 195
Bottom	Mk 52, Mod 2	Magnetic	7·4 *(2·25)*	2·8 *(0·84)* (over fins)	600 *(182·9)*	595/HBX-1	1 251
Bottom	Mk 52, Mod 3	Pressure Magnetic	7·4 *(2·25)*	2·8 *(0·84)* (over fins)	150 *(45·7)*	595/HBX-1	1 261
Bottom	Mk 52, Mod 5	Acoustic Magnetic	7·4 *(2·25)*	2·8 *(0·84)* (over fins)	150 *(45·7)*	595/HBX-1	1 257
Bottom	Mk 52, Mod 6	Pressure Acoustic Magnetic	7·4 *(2·25)*	2·8 *(0·84)* (over fins)	150 *(45·7)*	595/HBX-1	1 242
Bottom	Mk 55, Mod 2	Magnetic	9·5 *(2·89)*	3·4 *(1·03)* (over fins)	600 *(182·9)*	1 270/HBX-1	2 178
Bottom	Mk 55, Mod 3	Pressure Magnetic	9·5 *(2·89)*	3·4 *(1·03)* (over fins)	150 *(45·7)*	1 270/HBX-1	2 188·5
Bottom	Mk 55, Mod 5	Acoustic Magnetic	9·5 *(2·89)*	3·4 *(1·03)* (over fins)	150 *(45·7)*	1 270/HBX-1	2 188
Bottom	Mk 55, Mod 6	Pressure Acoustic Magnetic	9·5 *(2·89)*	3·4 *(1·03)* (over fins)	150 *(45·7)*	1 270/HBX-1	2 196·5
Bottom	Mk 55, Mod 7	Dual Channel; Magnetic	9·5 *(2·89)*	3·4 *(1·03)*	600 *(182·9)*	1 270/HBX-1	2 195
Moored	Mk 56, Mod 0	Total Field; Magnetic, 2 Channel	11·5 *(3·5)* (faired)	3·5 *(1·06)* (over fins)	1 200 *(365·8)*	350/HBX-3	2 228

Submarine/Surface Laid

Moored	Mk 57, Mod 0	Total Field; Magnetic, 2 Channel	10 *(3)*	1·75 *(0·51)* (over arming bar)	1 150 *(350·5)*	340/HBX-3	2 059

Note: All Mark 52 mines were approved for service in 1958; Mark 55 mines in 1961. The initial service dates of the Mark 56, Mark 57 mines are not available.

Service Destructors (DST)

Notes: The Service Destructor Mine originated in the Viet-Nam War. A Service Destructor is a modified general purpose low drag bomb. The modification is done by using a Mark 75, Mod 0 Destructor Modification Kit. The kit was designed to modify the 500-lb bomb (Mark 36), 1 000-lb bomb (Mark 40) and 2 000-lb bomb (Mark 41), Mark 80 series, for land or water use in South-east Asia. The primary targets were sampans, junks and small coastal craft that had a small magnetic signature. The origin of the DST 115A is unknown. The DST mines are the first mines to be useful on both land and in the sea. The DST 115A can also be laid by small craft.

Aircraft Laid (no parachute)

Type	*Designation*	*Firing method*	*Maximum length feet (metres)*	*Maximum width/diameter feet (metres)*	*Maximum depth feet (metres)*	*Weight and type of explosive charge (lb)*	*Assembled weight (lb)*
Bottom	DST Mk 36, Mods 0/3	Thin Film Magneto-meter	7·4 *(2·25)*	1·25 *(0·4)* (over fins)	300 *(91·4)*	192/H-6	576
Bottom	DST Mk 36, Mod 4	Magnetic Seismic	7·4 *(2·25)*	1·25 *(0·4)* (over fins)	300 *(91·4)*	192/H-6	576
Bottom	DST Mk 36, Mod 5	Magnetic Seismic	7·4 *(2·25)*	1·25 *(0·4)* (over fins)	300 *(91·4)*	192/H-6	576
Bottom	DST Mk 40, Mods 0/3	Thin Film Magneto-meter	9·4 *(2·86)*	1·9 *(0·57)* (over fins)	300 *(91·4)*	450/H-6	1 061
Bottom	DST Mk 40, Mod 4	Magnetic Seismic	9·4 *(2·86)*	1·9 *(0·57)* (over fins)	300 *(91·4)*	450/H-6	1 061
Bottom	DST Mk 40, Mod 5	Magnetic Seismic	9·4 *(2·86)*	1·9 *(0·57)* (over fins)	300 *(91·4)*	450/H-6	1 061
Bottom	DST Mk 41, Mods 0/3	Thin Film Magneto-meter	12·6 *(3·83)*	2·1 *(0·63)* (over fins)	N/A	N/A/H-6	2 043
Bottom	DST Mk 41, Mods 4/5	Magnetic Seismic	12·5 *(3·83)*	2·1 *(0·63)* (over fins)	N/A	N/A/H-6	2 031
Surface	DST 115A	Magnetic Seismic	1·5 *(0·45)*	2·08 *(0·62)*	150 *(145·7)*	45/HBX-3	135

N/A = Not Available

Future

Four mine programmes are currently under development:

(1) **Quickstrike**—a refit programme to convert existing bombs to mines and to develop a new 2 000 lb (909 kg) mine.
(2) **Intermediate Water Depth (IWD) Mine**—for use against submarines and surface ships.
(3) **Submarine-Launched Mobile Mine (SLMM)**—a self-propelled, submarine-launched mine that will permit covert mining of waters inaccessible to other delivery vehicles.
(4) **Captor**—a deep-water ASW mine designed to launch the Mk 46 lightweight acoustic homing torpedo at a dived submarine.

Naval Ordnance

Note: Listed in this table is data on all naval guns currently (1 March 1981) in US Naval ships:

Guns	*Designation*	*Gun Weight (tons)*	*Barrel length (inches)*	*Range (yards) and elevation*	*Maximum altitude (feet)*	*Muzzle velocity (feet per second)*
16 in/50 cal *(406 mm)*	Mk 7, Mod 0	119·6	800	40 185 (AP 45° elv) 41 622 (HC 45° elv)	N/A (AP proj) 38 049 (HC proj)	2 425 (AP proj) 2 690 (AP proj)
8 in/55 cal *(203·2 mm)*	Mk 16, Mod 0	18·7	440	30 100 (AP 41° elv) 31 350 (HC 41° elv)	24 770 (AP proj) 27 860 (HC proj)	2 500 (AP proj) 2 700 (HC proj)
	Mk 15, Mod 0	18·6	440	30 100 (AP 41° elv)	24 770 (AP proj)	2 500 (AP proj)
	Mk 12, Mod 1	17·1	440	31 350 (HC 41° elv)	27 860 (HC proj)	2 700 (HC proj)
5 in/54 cal *(127 mm)*	Mk 18, Mod 0	2·8	270	25 909	48 700	2 650
5 in/54 cal *(127 mm)*	Mk 16, Mod 0	2·7	270	25 183	48 657	2 500
5 in/38 cal *(127 mm)*	Mk 12, Mod 1	2	190	17 306	32 250	2 500
3 in/50 cal *(76·2 mm)*	Mk 21, Mods 0, 2 Mk 22, Mods 0—9	0·6	150	14 041 (45° elv)	29 367	2 650
40 mm/60 cal (quad)	Mk 1, Mod 0	0·1	90·8	11 189 (40° elv)	21 768	2 800
40 mm/60 cal (twin)	Mk 1, Mod 0	0·1	90·8	11 189 (40° elv)	21 633	2 800
40 mm/60 cal (single)	Mk 1, Mod 0	0·1	90·8	10 850 (40° elv)	21 633	2 800
20 mm/70 cal	Mk 2, Mod — Mk 4, Mods 0, 1	0·08	51·7	4 800 (35° elv)	10 000	2 730
6 pdr (saluting)	Mk 9, Mod 1	0·4	103·3	N/A (20° elv)	N/A	N/A
6 pdr (saluting)	Mk 3, Mod 0	0·4	103·9	N/A (20° elv)	N/A	N/A
40 mm (saluting)	Mk 11, Mod 0	0·08	72	N/A (5° elv)	N/A	N/A

AP = Armour Piercing; HC = High Capacity; N/A = Not Available.

Naval Ship Overhauls For Fiscal Years 1981 And 1982

At any one time, 10—15 per cent of the total US Naval strength is incapacitated in shipyards undergoing overhaul and are not readily available for duty. The table below should be taken into account when using The Strength of the Fleet table at the front of this section. Finally, major conversions are not listed in the table below as they are discussed in the various class notes in detail.

Name/Hull Number	*Yard Location*	*FY*	*From*	*To*
SUBMARINES				
Lafayette (SSBN 616)	Newport News SB & DD Co	1981	2 Mar 1981	2 Dec 1982
Kamehameha (SSBN 642)	Portsmouth Naval Shipyard	1981	1 Apr 1981	1 Nov 1982
Lewis and Clark (SSBN 644)	Newport News SB & DD Co	1981	16 July 1981	15 Mar 1983
James K. Polk (SSBN 645)	Portsmouth Naval Shipyard	1982	1 Oct 1981	1 May 1983
George C. Marshall (SSBN 654)	Newport News SB & DD Co	1981	28 Sep 1981	2 July 1983
Henry L. Stimson (SSBN 655)	Newport News SB & DD Co	1982	2 Mar 1982	4 Nov 1983
George Washington Carver (SSBN 656)	Newport News SB & DD Co	1982	7 July 1982	9 Mar 1984
Swordfish (SSN 579)	Pearl Harbor Naval Shipyard	1981	17 Mar 1981	1 Nov 1982
Skipjack (SSN 585)	Mare Island Naval Shipyard	1981	13 Feb 1981	15 Aug 1982
Sculpin (SSN 590)	Mare Island Naval Shipyard	1981	1 Apr 1981	1 Oct 1982
Shark (SSN 591)	Mare Island Naval Shipyard	1981	21 Sep 1981	25 Mar 1983
Haddo (SSN 604)	Mare Island Naval Shipyard	1982	26 Apr 1982	25 Nov 1983
Ethan Allen (SSN 608)	Puget Sound Naval Shipyard	1982	4 Jan 1982	4 June 1983
Queenfish (SSN 651)	Puget Sound Naval Shipyard	1981	28 Aug 1981	28 Jan 1983
Sea Devil (SSN 664)	Charleston Naval Shipyard	1982	19 Oct 1981	20 May 1983
Pintado (SSN 672)	Pearl Harbor Naval Shipyard	1982	4 June 1982	7 Oct 1983
Trepang (SSN 674)	Portsmouth Naval Shipyard	1981	17 Nov 1980	18 May 1982
Bluefish (SSN 675)	Norfolk Naval Shipyard	1982	22 June 1982	28 Oct 1983
Billfish (SSN 676)	Portsmouth Naval Shipyard	1982	15 Mar 1982	19 Aug 1983
Glenard P. Lipscomb (SSN 685)	Norfolk Naval Shipyard	1981	16 Mar 1981	16 July 1982
L. Mendel Rivers (SSN 686)	Charleston Naval Shipyard	1981	23 Mar 1981	23 July 1982
Richard B. Russell (SSN 687)	Mare Island Naval Shipyard	1982	29 Jan 1982	27 May 1983
SURFACE COMBATANTS				
Aircraft Carrier				
Kitty Hawk (CV 63)	Puget Sound Naval Shipyard	1982	11 Jan 1982	24 Jan 1983
Cruisers				
California (CGN 36)	Norfolk Naval Shipyard	1982	5 Jan 1982	5 Apr 1983
Leahy (CG 16)	Long Beach Naval Shipyard	1981	19 Jan 1981	19 Feb 1982
Worden (CG 18)	Pearl Harbor Naval Shipyard	1981	1 Dec 1980	1 Mar 1982
Dale (CG 19)	Charleston Naval Shipyard	1981	2 Mar 1981	2 Mar 1982
Richmond K. Turner (CG 20)	Charleston Naval Shipyard	1982	15 Jan 1982	15 Jan 1983
Halsey (CG 23)	Long Beach Naval Shipyard	1982	3 May 1982	6 June 1982
Josephus Daniels (CG 27)	Philadelphia Naval Shipyard	1982	30 Aug 1982	30 Aug 1983
Horne (CG 30)	Long Beach Naval Shipyard	1981	22 June 1981	23 July 1982
William H. Standley (CG 32)	Puget Sound Naval Shipyard	1982	15 June 1982	15 July 1983
Destroyers				
Lawrence (DDG 4)	Philadelphia Naval Shipyard	1981	11 May 1981	11 May 1982
Claude V. Ricketts (DDG 5)	Norfolk Naval Shipyard	1982	2 Nov 1981	1 Oct 1982
Henry B. Wilson (DDG 7)	Long Beach Naval Shipyard	1982	11 Jan 1982	10 Dec 1982
Sampson (DDG 10)	Norfolk Naval Shipyard	1981	8 Jan 1981	8 Jan 1982
Sellers (DDG 11)	Charleston Naval Shipyard	1982	10 June 1982	10 June 1983
Robison (DDG 12)	Puget Sound Naval Shipyard	1981	30 Mar 1981	26 Feb 1982
Berkeley (DDG 15)	Long Beach Naval Shipyard	1982	30 Nov 1981	30 Nov 1982
Semmes (DDG 18)	Philadelphia Naval Shipyard	1982	7 Apr 1982	7 Apr 1983
Tattnall (DDG 19)	Philadelphia Naval Shipyard	1981	31 Aug 1981	29 Nov 1982
Cochrane (DDG 21)	Pearl Harbor Naval Shipyard	1981	30 Mar 1981	29 Mar 1982
Richard E. Byrd (DDG 23)	Norfolk Naval Shipyard	1981	14 Oct 1980	14 Oct 1981

Name/Hull Number	Yard Location	FY	From	To
Destroyers				
Luce (DDG 38)	Philadelphia Naval Shipyard	1982	8 Dec 1981	8 Dec 1982
Coontz (DDG 40)	Philadelphia Naval Shipyard	1982	5 May 1982	5 May 1983
King (DDG 41)	Norfolk Naval Shipyard	1982	18 Apr 1982	18 Apr 1983
Mullinnix (DD 944)	Commercial Shipyard	1981	20 Feb 1981	22 Jan 1982
Paul F. Foster (DD 964)	Long Beach Naval Shipyard	1981	1 Oct 1980	24 Apr 1981
Kinkaid (DD 965)	Long Beach Naval Shipyard	1981	17 Mar 1981	17 Nov 1981
Hewitt (DD 966)	Long Beach Naval Shipyard	1981	19 May 1981	18 Jan 1982
Elliot (DD 967)	Commercial Shipyard	1981	17 Aug 1981	16 Apr 1982
Arthur W. Radford (DD 968)	Commercial Shipyard	1981	26 Sep 1981	26 June 1982
Peterson (DD 969)	Philadelphia Naval Shipyard	1982	15 July 1982	15 May 1983
Caron (DD 970)	Commercial Shipyard	1982	4 May 1982	8 Feb 1983
David R. Ray (DD 971)	Commercial Shipyard	1982	22 Feb 1982	22 Oct 1982
Oldendorf (DD 972)	Long Beach Naval Shipyard	1982	19 July 1982	18 Mar 1983
O'Brien (DD 975)	Commercial Shipyard	1982	28 June 1982	28 Feb 1983
Merrill (DD 976)	Long Beach Naval Shipyard	1982	1 Feb 1982	1 Oct 1982
Frigates				
Ramsey (FFG 2)	Long Beach Naval Shipyard	1982	5 Oct 1981	6 Aug 1982
Talbot (FFG 4)	Philadelphia Naval Shipyard	1982	15 Aug 1982	15 June 1983
Garcia (FF 1040)	Commercial Shipyard	1982	20 Nov 1981	5 Oct 1982
Edward McDonnell (FF 1043)	Bath Iron Works, Bath, Me	1981	2 Feb 1981	2 Dec 1981
Brumby (FF 1044)	Bath Iron Works, Bath, Me	1981	2 Mar 1981	15 Jan 1982
Davidson (FF 1045)	Pearl Harbor Naval Shipyard	1981	17 Oct 1980	14 July 1981
O'Callaghan (FF 1051)	Puget Sound Naval Shipyard	1981	12 Jan 1981	13 Nov 1981
Knox (FF 1052)	Yokosuka Ship Repair Facility	1981	1 Oct 1980	3 Aug 1981
Patterson (FF 1061)	Commercial Shipyard	1982	4 Aug 1982	8 Apr 1983
Reasoner (FF 1063)	Commercial Shipyard	1981	7 Oct 1980	8 Oct 1981
Downes (FF 1070)	Long Beach Naval Shipyard	1982	5 Apr 1982	7 Feb 1983
Badger (FF 1071)	Pearl Harbor Naval Shipyard	1981	14 Sep 1981	11 June 1982
Harold E. Holt (FF 1074)	Pearl Harbor Naval Shipyard	1982	12 Apr 1982	17 Dec 1982
Hewes (FF 1078)	Commercial Shipyard	1981	4 May 1981	7 Apr 1982
Paul (FF 1080)	Commercial Shipyard	1982	13 Apr 1982	17 Dec 1982
Kirk (FF 1087)	Yokosuka Ship Repair Facility	1982	18 Jan 1982	12 Nov 1982
Light Forces				
Pegasus (PHM 1)	Norfolk Naval Shipyard	1981	21 Sep 1981	30 Nov 1981
Amphibious Warfare Ships				
Tarawa (LHA 1)	Long Beach Naval Shipyard	1981	10 Aug 1981	6 Aug 1982
Saipan (LHA 2)	Norfolk Naval Shipyard	1982	25 June 1982	13 June 1983
Charleston (LKA 113)	Commercial Shipyard	1982	14 June 1982	6 Apr 1983
Durham (LKA 114)	Commercial Shipyard	1981	30 Mar 1981	20 Nov 1981
St. Louis (LKA 116)	Commercial Shipyard	1982	23 Nov 1981	23 July 1982
Vancouver (LPD 2)	Commercial Shipyard	1981	23 Feb 1981	22 Oct 1981
Austin (LPD 4)	Commercial Shipyard	1981	1 Sep 1981	1 Aug 1982
Cleveland (LPD 7)	Commercial Shipyard	1981	6 Oct 1980	30 May 1981
Dubuque (LPD 8)	Commercial Shipyard	1982	30 Aug 1982	27 May 1983
Juneau (LPD 10)	Long Beach Naval Shipyard	1982	30 Nov 1981	27 Aug 1982
Ponce (LPD 15)	Commercial Shipyard	1982	14 Apr 1982	15 Jan 1983
Iwo Jima (LPH 2)	Norfolk Naval Shipyard	1981	1 Sep 1981	8 Aug 1982
Okinawa (LPH 3)	Commercial Shipyard	1982	24 May 1982	11 Mar 1983
New Orleans (LPH 11)	Puget Sound Naval Shipyard	1981	24 Feb 1981	23 Oct 1981
Spiegel Grove (LSD 32)	Commercial Shipyard	1981	25 July 1981	25 July 1982
Alamo (LSD 33)	Commercial Shipyard	1982	12 Apr 1982	11 Feb 1983
Anchorage (LSD 36)	Commercial Shipyard	1982	1 Mar 1982	5 Nov 1982
Pensacola (LSD 38)	Norfolk Naval Shipyard	1981	12 Jan 1981	15 Dec 1981
Fort Fisher (LSD 40)	Commercial Shipyard	1981	5 Feb 1981	8 Oct 1981
Saginaw (LST 1188)	Commercial Shipyard	1981	7 Jan 1981	23 Sep 1981
San Bernardino (LST 1189)	Commercial Shipyard	1981	6 Oct 1980	9 May 1981
Boulder (LST 1190)	Commercial Shipyard	1981	5 May 1981	25 Nov 1981
Racine (LST 1191)	Long Beach Naval Shipyard	1981	5 Mar 1981	5 Nov 1981
Spartanburg County (LST 1192)	Commercial Shipyard	1981	29 July 1981	3 Mar 1982
Fairfax County (LST 1193)	Commercial Shipyard	1982	25 Oct 1981	25 June 1982
La Moure County (LST 1194)	Commercial Shipyard	1981	7 Jan 1981	22 Sep 1982
Barbour County (LST 1195)	Commercial Shipyard	1981	5 Aug 1981	8 Apr 1982
Harlan County (LST 1196)	Commercial Shipyard	1982	20 Jan 1982	10 Sep 1982
Barnstable County (LST 1197)	Commercial Shipyard	1982	23 June 1982	9 Feb 1983
Bristol County (LST 1198)	Commercial Shipyard	1981	12 Jan 1981	11 Sep 1981
Mine Warfare Forces				
Constant (MSO 427)	Commercial Shipyard	1982	2 Sep 1982	2 Dec 1982
Dash (MSO 428)	Commercial Shipyard	1981	6 Jan 1981	21 Apr 1981
Detector (MSO 429)	Commercial Shipyard	1981	2 June 1981	15 Sep 1981
Direct (MSO 430)	Commercial Shipyard	1981	17 Mar 1981	10 July 1981
Enhance (MSO 437)	Commercial Shipyard	1982	23 Aug 1982	23 Nov 1982
Esteem (MSO 438)	Commercial Shipyard	1982	15 Mar 1982	15 June 1982
Exultant (MSO 441)	Commercial Shipyard	1981	15 Jan 1981	8 May 1981
Fearless (MSO 442)	Commercial Shipyard	1981	2 Dec 1980	27 Mar 1981
Fidelity (MSO 443)	Commercial Shipyard	1981	2 Apr 1981	14 July 1981
Illusive (MSO 448)	Commercial Shipyard	1981	22 Oct 1980	9 Feb 1981
Implicit (MSO 455)	Commercial Shipyard	1982	22 Feb 1982	25 May 1982
Pluck (MSO 464)	Commercial Shipyard	1981	30 Mar 1981	30 June 1982
Pledge (MSO 492)	Commercial Shipyard	1982	7 Sep 1982	7 Dec 1982
Auxiliary Ships				
Prairie (AD 15)	Commercial Shipyard	1982	5 Oct 1981	5 Aug 1982
Yosemite (AD 19)	Commercial Shipyard	1981	16 Oct 1980	17 Aug 1981
Mauna Kea (AE 22)	Commercial Shipyard	1982	11 Jan 1982	12 Nov 1982
Nitro (AE 23)	Commercial Shipyard	1982	5 Jan 1982	5 Nov 1982
Pyro (AE 24)	Commercial Shipyard	1981	8 July 1981	7 May 1982
Flint (AE 32)	Commercial Shipyard	1982	23 Aug 1982	24 June 1983
Mars (AFS 1)	Commercial Shipyard	1982	26 July 1982	26 Nov 1982
Point Loma (AGDS 2)	Mare Island Naval Shipyard	1981	1 Oct 1980	30 Dec 1981
Sacramento (AOE 1)	Commercial Shipyard	1981	1 Oct 1980	27 Nov 1981
Camden (AOE 2)	Commercial Shipyard	1982	5 Oct 1981	29 Nov 1982
Detroit (AOE 4)	Commercial Shipyard	1982	13 Jan 1982	12 Jan 1983
Savannah (AOR 4)	Commercial Shipyard	1981	2 Mar 1981	4 Dec 1981
Wabash (AOR 5)	Commercial Shipyard	1982	1 Mar 1982	3 Dec 1982
Vulcan (AR 5)	Commercial Shipyard	1982	9 Oct 1981	13 Aug 1982
Jason (AR 8)	Commercial Shipyard	1982	4 Jan 1982	15 Oct 1982
Preserver (ARS 8)	Commercial Shipyard	1982	25 Feb 1982	25 July 1982
Conserver (ARS 39)	Commercial Shipyard	1981	21 Oct 1980	2 Apr 1981
Hoist (ARS 40)	Commercial Shipyard	1982	31 Aug 1982	28 Jan 1983
Opportune (ARS 41)	Norfolk Naval Shipyard	1981	7 Oct 1980	27 Mar 1981
Recovery (ARS 43)	Commercial Shipyard	1982	5 Jan 1982	3 June 1982
Hunley (AS 31)	Charleston Naval Shipyard	1981	1 Oct 1980	15 Aug 1981
Holland (AS 32)	Charleston Naval Shipyard	1982	1 Dec 1981	1 Sep 1982
Florikan (ASR 9)	Commercial Shipyard	1981	1 Sep 1981	6 Jan 1982
Kittiwake (ASR 13)	Commercial Shipyard	1981	1 Sep 1981	6 Jan 1982
Petrel (ASR 14)	Commercial Shipyard	1981	5 Jan 1981	16 July 1981
Quapaw (ATF 110)	Commercial Shipyard	1981	16 Mar 1981	16 Aug 1981
Papago (ATF 160)	Commercial Shipyard	1981	30 Oct 1980	30 Mar 1981
Edenton (ATS 1)	Norfolk Naval Shipyard	1981	3 Aug 1981	12 Mar 1982
Beaufort (ATS 2)	Commercial Shipyard	1981	13 July 1981	4 Mar 1982

DELETIONS

Note: Deletions as of 1 March 1981. Disposals listed in parenthesis after each entry. For those ships whose disposal is indicated as 'transfer', see succeeding pages for further details on the transfer.

Submarines

1978 15 July *Lizardfish* (SS 373) (transfer); 30 Sep *Sailfish* (SS 572) (pending); 19 Dec *Trout* (SS 566) (transfer)
1980 1 Aug *Growler* (target)
1981 *Theodore Roosevelt, Abraham Lincoln*

Aircraft Carrier

1981 Mar *Intrepid* (CVS 11) (memorial)

Cruisers

1978 31 July *Providence* (CG 6), *Springfield* (CG 7), *St Paul* (CA 73) and *Canberra* (CA 70) (all scrap); *Newport News* (CA 148) (possible memorial)
1980 1 Mar *Chicago* (CG 11) (pending)

Guided Missile Destroyers

1978 29 Apr *John S. McCain* (DDG 36) (scrapped); 1 June *Mitscher* (DDG 35) (scrapped)

Destroyers

1978 30 May *Bausell* (DD 845) (target); 1 July *William R. Rush* (DD 714) (transfer); 1 Dec *Agerholm* (DD 826) (target)
1979 29 June *Meredith* (DD 890) (transfer); 15 July *Higbee* (DD 806) (pending); 27 July *John R. Craig* (DD 885) (pending); 31 Aug *Hollister* (DD 788) (pending); 1 Oct *Hamner* (DD 718) *Hawkins* (DD 873) *Myles C. Fox* (DD 829) and *Charles P. Cecil* (DD 835) (all transfer)
1980 30 Sep *Damato* (DD 871); 1 Oct *Henderson* (DD 785) *Corry* (DD 817) (both transfer)
1981 19 Feb *Rogers* (DD 876); 20 Feb *Carpenter* (DD 825); 23 Feb *Southerland* (DD 743); 27 Feb *Dyess* (DD 883) *Johnston* (DD 821) (all transfer)

Frigate

1978 15 July *Booth* (FF 170) (transfer)

Light Forces

1979 *PTF 23, 24* and *26* (all sold)
1980 11 Mar *PTF 25* (pending)

Amphibious Transport

1980 1 Jan *Paul Revere* (LPA 248) and *Francis Marion* (LPA 249) (both transfer)

Amphibious Transport (small)

1978 31 Mar *Enright* (APD 66) (transfer)

Tank Landing Ships

1978 15 Apr *Page County* (LST 1076) and *Park County* (LST 1077) (both transfer); 15 June *Clarke County* (LST 601) and *Iredell County* (LST 839) (both transfer)
1979 15 Sep *LST 222, LST 488, Caddo Parish* (LST 515), *LST 546, Hickman County* (LST 825) and *Madera County* (LST 905) (all transfer)

Destroyer Tenders

1978 15 June *Tidewater* (AD 31) (transfer)
1980 1 Apr *Shenandoah* (AD 26) (scrapped)

Hydrofoil Research Ship

1978 30 Sep *Plainview* (AGEH 1) (deleted this date; not stricken as classified as "boat"; Hulk stripped and scrapped)

Missile Range Instrumentation Ship

1980 31 Oct *Wheeling* (AGM 8) (target)

Cargo Ships

1979 1 Aug *Norwalk* (AK 279); 15 Aug *Schuyler Otis Bland* (AK 277) (both sold)
1981 16 Jan *Greenville Victory* (AK 237), *Sergeant Andrew Miller* (AK 242), *Sergeant Truman Kimbro* (AK 254), *Lieutenant James E. Robinson* (AK 274) (all sold)

Netlaying Ship

1978 31 Mar *Mulberry* (AN 27) (transfer)

Gasoline Tanker

1978 15 Apr *Tombigbee* (AOG 11) (transfer)

Transport Oiler

1980 1 Mar *Chepachet* (AOT 78) (to Dept of Energy 13 Mar 1978)

Repair Ship

1978 1 Sep *Grand Canyon* (AR 28) (ex-AD; sold)

Repair Ship, Small

1978 15 June *Askari* (ARL 30) (transfer)

Salvage Ships

1978 31 Mar *Grasp* (ARS 24) (transfer)
1979 15 Aug *Deliver* (ARS 23) (transfer); 28 Sep *Safeguard* (ARS 25) (transfer)

Submarine Tenders

1980 15 Nov *Bushnell* (AS 15) (target); *Howard W. Gilmore* (AS 16) (pending)

Auxiliary Ocean Tugs

1978 1 July *Samoset* (ATA 190) (transfer)
1980 1 June *Keywadin* (ATA 213) (transfer)

Fleet Ocean Tugs

1978 31 Mar *Cusabo* (ATF 155) (transfer); 21 Apr *Cree* (ATF 84) (accidently bombed 18 Jan 78; seriously damaged; sunk as target 27 Aug 1978); 1 June *Tawakoni* (ATF 114) (transfer); 1 Aug *Molala* (ATF 106) (transfer); 1 Sep *Nipmuc* (ATF 157) and *Salinan* (ATF 161) (both transfer); 30 Sep *Abnaki* (ATF 96), *Cocopa* (ATF 101) and *Hitchiti* (ATF 103) (all transfer)
1980 15 Mar *Shakori* (ATF 162) (transfer)

SERVICE CRAFT

Floating Dry Docks

1978 17 Feb AFDL 43 (sold); 15 Nov YFD 9 (sold)
1979 15 Sep AFDL 33 and AFDL 20 (both transfer); 15 Oct YFD 7 (sold)
1980 15 Jan ARD 8, ARD 24, AFDL 44 (all transfer)
1981 15 Feb *Ability* (AFDL 7) (sold)

Covered Lighters

1978 15 July YC 1516 (sold)
1979 1 Jan YC 306 (sunk); 15 Sep YC 1402 (sold); 15 Oct YC 1460 (sold)
1980 15 Jan YC 1462 (target); 1 Aug YC 1413 (to Defence Nuclear Agency); 15 Aug YC 1385 (sold)

Aircraft Transport Lighter

1980 15 Aug YCV 9 (sold)

Floating Cranes

1979 15 June YD 153 (sold); 15 Sep YD 191 (transfer)

Covered Lighters (non self-propelled)

1980 15 May YFN 902 (sold); 15 Aug YFN 692 (sold)

Dry Dock Companion Craft

1980 15 July YFND 27 (sold)

Lighter (Special Purpose)

1978 15 July YFNX 21 (sold)

Harbour Utility Craft

1978 1 Oct YFU 93 (sold)

Fuel Oil Barges

1980 15 Aug YO 257 (sold); 1 Nov YO 171 (transfer)

Gasoline Barge

1980 15 Apr YOG 87 (sold)

Gasoline Barge (non self-propelled)

1978 1 Dec YOGN 16 (sold)

Fuel Oil Barge (non self-propelled)

1978 15 Mar YON 1 (sold)

Patrol Craft

1978 1 June YP 591 (sold)

Floating Pile Driver

1979 15 Sep YPD 43 (transfer)

Floating Workshop

1979 15 Sep YR 59 (transfer)

Seaplane Wrecking Derricks

1978 15 Apr YSD 34 (sold); 15 Aug YSD 72 (sold)

Sludge Removal Barge (non self-propelled)

1980 15 Sep YSR 4 (sold)

Small Harbour Tugboats

1979 1 Feb YTL 435 (sold); 1 Mar YTL 558 (sold); 15 Sep YTL 425 and YTL 427 (both transfer)

Medium Harbour Tugboats

1978 1 May *Anamos* (YTM 409) (target); 15 Nov *Manktao* YTM 734) (target)
1979 1 Aug *Lelaka* (YTM 777) (sold); 1 Oct *Canadoga* (YTM 390) (target 13 June 1980)
1980 1 Nov *Junaluska* (YTM 176), *Mecosta* (YTM 392), *Pitamakan* (YTM 403), *Etawina* (YTM 543) (all sold)

Water Barges

1979 15 Sep YW 122 (transfer)
1980 1 Nov YW 128 (transfer)

US Naval Ships And Craft Transferred To Foreign Countries

This section comprises a list of ships and craft, arranged by date transferred, to a foreign country, since 1 January 1978. All transfers, except where noted took place under the International Logistics Programme (formerly the Military Defense Assistance Pact). The six methods of transfer are as follows:
Sale: The recipient buys the vessel(s) and receives the title(s). Most ship transfers usually fall in this category.
Loan: Vessel(s) loaned to recipient. US Navy retains title; recipient pays operating and maintenance costs.
Grant Aid: The recipient receives the vessel(s) in lieu of a grant of money. The USA does not retain title, but pays for activation (if needed), modernisation, and all other costs to make the vessel(s) suitable for transfer. After the transfer, the recipient country assumes all costs.
Lease: Similar to a loan, only the navy of the recipient country, rather than its government, makes the request to lease vessel(s) directly to the US Navy rather than to the US government.
Off-Shore Procurement (OSP): Vessel(s) built in a foreign yard (usually in a yard in country of the recipient) and the United States pays half the costs of construction and/or provides equipment and technical assistance. US Navy hull numbers are assigned for accounting purposes.
Special: Vessel(s) transferred under methods other than the five listed above will be listed in the "Mode" column as Special.

Notes:
(a) A single asterisk before a date in the "Date of Transfer" column indicates that the ship in question had previously been loaned or leased to the indicated country at an earlier date.
(b) A "—" in the "Recipient Name/Hull Number" column indicates that as of writing the foreign name and pennant number were unknown.

Date of Transfer	*Recipient*	*USN Name/Hull Number*	*Recipient Name/Hull Number*	*Mode*
1978				
10 Mar	Taiwan	*Leonard F. Mason* (DD 852)	*Lai Yang* (DD 981)	Sale
31 Mar	South Korea	*Grasp* (ARS 24)	*Chang Won* (ARS 5)	Sale
*31 Mar	Colombia	*Ruchamkin* (LPR 89)	*Cordoba* (DT 15)	Sale
*31 Mar	Colombia	*Choctaw* (ATF 70)	*Pedro De Heredia* (RM 72)	Sale
*31 Mar	Colombia	*Kaimia* (ATA 184)	*Bahia Utria* (RM 75)	Sale
*31 Mar	Colombia	YTL 231	*Teniente Ricardo Sorzano* (RM 73)	Sale
*31 Mar	Colombia	YFR 443	*Quindio* (RM 153)	Sale
*31 Mar	Colombia	YFND 6	*Victor Cubillos*	Sale
* 3 Apr	Taiwan	YFND 19	—	Sale
* 3 Apr	Taiwan	LCU 1212	*Ho Chi* (LCU 401)	Sale
* 3 Apr	Taiwan	LCU 1218	*Ho Huei* (LCU 402)	Sale
* 3 Apr	Taiwan	LCU 1244	*Ho Yao* (LCU 403)	Sale
* 3 Apr	Taiwan	LCU 1367	*Ho Deng* (LCU 404)	Sale
* 3 Apr	Taiwan	LCU 1397	*Ho Feng* (LCU 405)	Sale
* 3 Apr	Taiwan	LCU 1429	*Ho Chao* (LCU 406)	Sale
* 3 Apr	Taiwan	LCU 1452	*Ho Teng* (LCU 407)	Sale
*17 May	Spain	*Noa* (DD 841)	*Blas De Lezo* (D 65)	Sale
*17 May	Spain	*Eugene A. Greene* (DD 711)	*Churruca* (D 61)	Sale
*17 May	Spain	*Furse* (DD 882)	*Gravina* (D 62)	Sale
*17 May	Spain	*Leary* (DD 879)	*Langara* (D 64)	Sale
*17 May	Spain	*O'Hare* (DD 889)	*Mendez Nunez* (D 63)	Sale
*17 May	Spain	*Tom Green County* (LST 1159)	*Conde De Venadito* (L 13)	Sale
*17 May	Spain	*Wexford County* (LST 1168)	*Martin Alvarez* (L 12)	Sale
*17 May	Spain	*Terrebonne Parish* (LST 1156)	*Velasco* (L 11)	Sale
1 June	Taiwan	*Tawakoni* (ATF 114)	*Ta Han* (ATF 324)	Sale
1 July	South Korea	*William R. Rush* (DD 714)	*Kang Won* (DD 922)	Sale
*11 July	Greece	*Rupertus* (DD 851)	*Kontouriotis* (D 213)	Sale
*11 July	Greece	*Arnold J. Isbell* (DD 869)	*Sachtouris* (D 214)	Sale
*11 July	Greece	*Tombigbee* (AOG 11)	*Ariadni* (A 414)	Sale
*11 July	Greece	*Page County* (LST 1076)	*Kriti* (L 171)	Sale
*11 July	Greece	*Ankachak* (YTM 767)	*Aias* (A 412)	Sale
*12 July	Mexico	AFDL 28	—	Sale
*12 July	Mexico	*Park County* (LST 1077)	*Panuco* (A 01)	Sale
*12 July	Mexico	YD 156	—	Sale
*12 July	Mexico	YD 157	—	Sale
*12 July	Mexico	YD 180	—	Sale
*12 July	Mexico	YD 183	—	Sale
*12 July	Mexico	YD 203	—	Sale
1 Aug	Mexico	*Molala* (ATF 106)	R-7 (chg. to *Otomi* (A 17) within week after transfer)	Sale
*30 Aug	Ecuador	*Enright* (APD 66)	*Moran Valverde* (D 01)	Sale
*30 Aug	Ecuador	*Cusabo* (ATF 155)	*Cayambe* (R 101)	Sale
*30 Aug	Ecuador	Army FS 525	*Calicuchima* (T 53)	Sale
*30 Aug	Ecuador	*Mulberry* (AN 27)	*Orion* (0 111)	Sale
*30 Aug	Ecuador	*Eunice* (PCE 846)	*Esmeraldes* (P 22)	Sale
*30 Aug	Ecuador	*Pascagoula* (PCE 874)	*Manabi* (P 23)	Sale
*31 Aug	Philippines	*Booth* (FF 170)	*Datu Kalantiaw* (PS 76)	Sale
*31 Aug	Philippines	USCG *Nettle* (WAK 169)	*Limasawa* (TK 79)	Sale
1 Sep	Ecuador	*Holder* (DD 819)	*Presidente Eloy Alfaro*	Sale
1 Sep	Venezuela	*Nipmuc* (ATF 157)	*Antonio Picardi* (R 22)	Sale
1 Sep	Venezuela	*Salinan* (ATF 161)	*Miguel Rodriquez* (R 23)	Sale
30 Sep	Mexico	*Abnaki* (ATF 96)	*Yaqui* (A 18)	Sale
30 Sep	Mexico	*Cocopa* (ATF 101)	*Seri* (A 19)	Sale
30 Sep	Mexico	*Hitchiti* (ATF 103)	*Cora* (A 20)	Sale
16 Oct	Haiti	*Samoset* (ATA 190)	*Henri Christophe* (MH 20)	Sale
19 Dec	Iran	*Trout* (SS-566)	*Kousseh* (S 101)	Sale
Dec	Philippines	AFDL 10	—	Lease
1979				
*22 Feb	Indonesia	*Iredell County* (LST 839)	*Teluk Bone* (511)	Sale
*22 Feb	Indonesia	*Clarke County* (LST 601)	*Teluk Saleh* (510)	Sale
*22 Feb	Indonesia	*Askari* (ARL 30)	*Jaya Wijaya* (921)	Sale
*1 Mar	Thailand	*Stone County* (LST 1141)	*Lanta* (LST 4)	Sale
15 Mar	Colombia	*Carib* (ATF 82)	*Sebastian De Belal Calzar* (RM 73)	Sale
15 Mar	Colombia	*Hidasta* (ATF 102)	*Rodrigo De Bastidas* (RM 74)	Sale
15 Mar	Colombia	*Jicarilla* (ATF 104)	—	Sale
Apr	Colombia	YR 66	—	Sale
Apr	Colombia	*Umpqua* (ATA 209)	*Bahia Honda* (sunk 13 Feb 75)	Sale
13 July	Italy	*Capitaine* (SS 336)	*Evangelista Torricelli* (S 512)	Sale
15 Sep	South Korea	*Deliver* (ARS 23)	*Gumi* (ARS 26)	Sale
28 Sep	Turkey	*Safeguard* (ARS 25)	*Işin* (A 589)	Sale
16 Oct	Uruguay	MSO 451	*Maldonado* (MS 33)	Sale
7 Dec	Turkey	*Meredith* (DD 890)	(Originally for cannibalisation and scrapping now to be reactivated)	Sale
1980				
17 Jan	Spain	*Paul Revere* (LPA 248)	*Castilla* (TA 12)	Sale
*31 Jan	Mexico	YPD 43	—	Sale
* 5 Feb	Greece	*Fort Mandan* (LSD 21)	*Nafkratoussa* (L 153)	Sale
8 Feb	Turkey	*Tang* (SS 563)	*Piri Reis* (S 343)	Lease
*11 Feb	Brazil	ARD 14	*Afonso Pena*	Sale
*11 Feb	Brazil	AFDL 39	*Cidade de Natal*	Sale
*11 Feb	Brazil	*Grant County* (LST 1174)	*Duque de Caxias* (G 26)	Sale

Date of Transfer	Recipient	USN Name/Hull Number	Recipient Name/Hull Number	Mode
* 5 Mar	Philippines	AFDL 20	YD 204	Sale
* 5 Mar	Philippines	*Krishna* (ARL 38)	*Narra* (AR 88)	Sale
* 5 Mar	Philippines	USNS LST 222 (T LST 222)	*Mindoro Occidental* (LT 93)	Sale
* 5 Mar	Philippines	USNS LST 488 (T LST 488)	*Suriago del Norte* (LT 94)	Sale
* 5 Mar	Philippines	*Caddo Parish* (LST 515)	*Maquindanao* (LT 96)	Sale
* 5 Mar	Philippines	USNS LST 546 (T LST 546)	*Suriago del Sur* (LT 95)	Sale
* 5 Mar	Philippines	*Hickman County* (LST 825)	*Cagayan* (LT 97)	Sale
* 5 Mar	Philippines	*Madera County* (LST 905)	*Ilicos Norte* (LT 98)	Sale
* 5 Mar	Philippines	YC 1402	—	Sale
* 5 Mar	Philippines	YOG 73	*Lake Buhi* (YO 78)	Sale
* 5 Mar	Philippines	YTL 425	*Tasaday* (YO 226)	Sale
* 5 Mar	Philippines	YTL 427	*Ilongot* (YO 225)	Sale
* 5 Mar	Philippines	YD 191	YU 207	Sale
*14 Mar	Indonesia	*Tidewater* (AD 31)	*Dumai* (562)	Sale
5 June	Turkey	*Robert H. McCard* (DD 822)	*Kaliç al Pasa* (D 349)	Lease
5 June	Turkey	*Fiske* (DD 842)	*Piyale Pasa* (D 350)	Lease
11 July	Spain	*Francis Marion* (LPA 249)	*Aragon* (TA 11)	Sale
* 1 Aug	Philippines	AFDL 44	YD 205	Sale
* 1 Aug	Philippines	USCG *Kukui* (WAK 186)	*Mactan* (TK 90)	Sale
2 Aug	Greece	*Charles P. Cecil* (DD 835)	*Apostolis* (D 216)	Sale
2 Aug	Greece	*Myles C. Fox* (DD 829)	(For cannibalisation and scrapping)	Sale
29 Aug	Taiwan	*Shakori* (ATF 162)	—	Sale
30 Sep	Pakistan	*Henderson* (DD 785)	*Tugrhil* (D 167)	Sale
30 Sep	Pakistan	*Damato* (DD 871)	*Tippu Sultan* (D 168)	Sale
30 Oct	Dominican Republic	*Stallion* (ATA 193)	*Enriguillo* (RM 22)	Lease
17 Dec	Taiwan	*Hamner* (DD 718)	—	Sale
1981				
26 Jan	Peru	YO 171	—	Sale
26 Jan	Peru	YW 128	—	Sale
20 Feb	Turkey	*Carpenter* (DD 825)	*Anit Tepe* (D 347)	Sale
27 Feb	South Korea	*Newman K. Perry* (DD 883)	—	Sale
27 Feb	Taiwan	*Johnston* (DD 821)	—	Sale
Mar	South Korea	*Rogers* (DD 876)	—	Sale
May	Greece	*Dyess* (DD 880)	—	Sale
May	Greece	*Corry* (DD 817)	—	Sale
—	Ecuador (?)	*Southerland* (DD 743)	—	Sale

HULL NUMBERS

(Type designations in order of arrangement within this volume; ships are in numerical sequence)

Strategic Missile Submarines

SSBN—Fleet Ballistic Missile Submarine

"Lafayette" Class
616 Lafayette
617 Alexander Hamilton
619 Andrew Jackson
620 John Adams
622 James Monroe
623 Nathan Hale
624 Woodrow Wilson
625 Henry Clay
626 Daniel Webster
627 James Madison
628 Tecumseh
629 Daniel Boone
630 John C. Calhoun
631 Ulysses S. Grant
632 Von Steuben
633 Casimir Pulaski
634 Stonewall Jackson
635 Sam Rayburn
636 Nathanael Greene
640 Benjamin Franklin
641 Simon Bolivar
642 Kamehameha
643 George Bancroft
644 Lewis and Clark
645 James K. Polk
654 George C. Marshall
655 Henry L. Stimson
656 George Washington Carver
657 Francis Scott Key
658 Mariano G. Vallejo
659 Will Rogers

"Ohio" Class
726 Ohio
727 Michigan
728 Florida
729 Georgia
730 Rhode Island

Submarines

SS/SSN—Attack Submarine
AGSS—Auxiliary Research Submarine
SSAG—Auxiliary Submarine
SSG—Guided Missile Submarine

"Dolphin" Class (AGSS)
555 Dolphin

"Tang" Class (SS)
565 Wahoo
567 Gudgeon (SSAG)

"Nautilus" Class (SSN)
571 Nautilus

"Grayback" Class (SS)
574 Grayback

"Seawolf" Class (SSN)
575 Seawolf

"Darter" Class (SS)
576 Darter

"Skate" Class (SSN)
578 Skate
579 Swordfish

"Barbel" Class (SS)
580 Barbel
581 Blueback
582 Bonefish

"Skate" Class (SSN) (Cont'd)
583 Sargo
584 Seadragon

"Skipjack" Class (SSN)
585 Skipjack

"Triton" Class (SSN)
586 Triton

"Halibut" Class (SSN)
587 Halibut

"Skipjack" Class (SSN) (Cont'd)
588 Scamp
590 Sculpin
591 Shark
592 Snook

"Thresher" Class (SSN)
594 Permit
595 Plunger
596 Barb

"Tullibee" Class (SSN)
597 Tullibee

"George Washington" Class (SSN)
598 George Washington
599 Patrick Henry
601 Robert E. Lee

"Thresher" Class (SSN) (Cont'd)
603 Pollack
604 Haddo
605 Jack
606 Tinosa
607 Dace

"Ethan Allen" Class (SSN)
608 Ethan Allen
609 Sam Houston
610 Thomas A. Edison
611 John Marshall

"Thresher" Class (SSN) (Cont'd)
612 Guardfish
613 Flasher
614 Greenling
615 Gato

"Ethan Allen" Class (SSN) (Cont'd)
618 Thomas Jefferson

"Thresher" Class (SSN) (Cont'd)
621 Haddock

"Sturgeon" Class (SSN)
637 Sturgeon
638 Whale
639 Tautog
646 Grayling
647 Pogy
648 Aspro
649 Sunfish
650 Pargo
651 Queenfish
652 Puffer
653 Ray
660 Sand Lance
661 Lapon
662 Gurnard
663 Hammerhead
664 Sea Devil
665 Guitarro
666 Hawkbill
667 Bergall
668 Spadefish
669 Seahorse
670 Finback

"Narwhal" Class (SSN)
671 Narwhal

"Sturgeon" Class (SSN) (Cont'd)
672 Pintado
673 Flying Fish
674 Trepang
675 Bluefish
676 Billfish
677 Drum
678 Archerfish
679 Silversides
680 William H. Bates
681 Batfish
682 Tunny
683 Parche
684 Cavalla

"Glenard P. Lipscomb" Class (SSN)
685 Glenard P. Lipscomb

"Sturgeon" Class (SSN) (Cont'd)
686 L. Mendel Rivers
687 Richard B. Russell

"Los Angeles" Class (SSN)
688 Los Angeles
689 Baton Rouge
690 Philadelphia
691 Memphis
692 Omaha
693 Cincinnati
694 Groton
695 Birmingham
696 New York City
697 Indianapolis
698 Bremerton

699 Jacksonville
700 Dallas
701 La Jolla
702 Phoenix
703 Boston
704 Baltimore
705 Corpus Christi
711 San Francisco
712 Atlanta
713 Houston

Aircraft Carriers

CV, CVA, CVN—Attack Aircraft Carriers
CVS—ASW Aircraft Carriers
AVT—Auxiliary Aircraft Landing Training Ship

"Essex" Class
12 Hornet (CVS)

"Intrepid" Class
16 Lexington (AVT)

"Essex" Class (Cont'd)
20 Bennington (CVS)

"Hancock" Class
31 Bon Homme Richard (CVA)
34 Oriskany (CV)

"Intrepid" Class (Cont'd)
38 Shangri-La (CVS)

"Midway" Class (CV)
41 Midway
43 Coral Sea

"Forrestal" Class (CV)
59 Forrestal
60 Saratoga
61 Ranger
62 Independence

"Kitty Hawk" Class (CV)
63 Kitty Hawk
64 Constellation

"Enterprise" Class (CVN)
65 Enterprise

"Kitty Hawk" Class (CV) (Cont'd)
66 America

"John F. Kennedy" Class (CV)
67 John F. Kennedy

"Nimitz" Class (CVN)
68 Nimitz
69 Dwight D. Eisenhower
70 Carl Vinson
71 —

Battleships

BB—Battleships

"Iowa" Class
61 Iowa
62 New Jersey
63 Missouri
64 Wisconsin

Cruisers

CG/CGN—Guided Missile Cruisers

Converted "Cleveland" Class (CG)
5 Oklahoma City

"Long Beach" Class (CGN)
9 Long Beach

"Albany" Class (CG)
10 Albany
11 Chicago

"Leahy" Class
16 Leahy
17 Harry E. Yarnell
18 Worden
19 Dale
20 Richmond K. Turner
21 Gridley
22 England
23 Halsey
24 Reeves

"Bainbridge" Class (CGN)
25 Bainbridge

"Belknap" Class (CG)
26 Belknap
27 Josephus Daniels
28 Wainwright
29 Jouett
30 Horne
31 Sterett
32 William H. Standley
33 Fox
34 Biddle

"Truxtun" Class (CGN)
35 Truxtun

"California" Class (CGN)
36 California
37 South Carolina

"Virginia" Class (CGN)
38 Virginia
39 Texas
40 Mississippi
41 Arkansas

"Ticonderoga" Class (CG)
47 Ticonderoga
48 —

CA—Gun Cruisers

"Des Moines" Class
134 Des Moines
139 Salem

Destroyers

DDG—Guided Missile Destroyers

"Charles F. Adams" Class
2 Charles F. Adams
3 John King
4 Lawrence
5 Claude V. Ricketts
6 Barney
7 Henry B. Wilson
8 Lynde McCormick
9 Towers
10 Sampson
11 Sellers
12 Robison
13 Hoel
14 Buchanan
15 Berkeley
16 Joseph Strauss
17 Conyngham
18 Semmes
19 Tattnall
20 Goldsborough
21 Cochrane
22 Benjamin Stoddert
23 Richard E. Byrd
24 Waddell

Converted "Forrest Sherman" and "Hull" Classes
31 Decatur
32 John Paul Jones
33 Parsons
34 Somers

"Coontz" Class
37 Farragut
38 Luce
39 MacDonough
40 Coontz
41 King
42 Mahan
43 Dahlgren
44 William V. Pratt
45 Dewey
46 Preble

"Kidd" Class
993 Kidd
994 Callaghan
995 Scott
996 Chandler

DD—Destroyers

"Gearing" Class
763 William C. Lawe
784 McKean

"Carpenter" Class
827 Robert A. Owens

"Gearing" Class (Cont'd)
862 Vogelgesang
863 Steinaker
864 Harold J. Ellison
866 Cone
886 Orleck

"Forrest Sherman" Class
931 Forrest Sherman
933 Barry
937 Davis
938 Jonas Ingram
940 Manley
941 Dupont
942 Bigelow
943 Blandy
944 Mullinnix

"Hull" Class
945 Hull
946 Edson
948 Morton
950 Richard S. Edwards
951 Turner Joy

"Spruance" Class
963 Spruance
964 Paul F. Foster
965 Kinkaid
966 Hewitt
967 Elliot
968 Arthur W. Radford
969 Peterson
970 Caron
971 David R. Ray
972 Oldendorf
973 John Young
974 Comte de Grasse
975 O'Brien
976 Merrill
977 Briscoe
978 Stump
979 Conolly
980 Moosburgger
981 John Hancock
982 Nicholson
983 John Rodgers
984 Leftwich
985 Cushing
986 Harry W. Hill
987 O'Bannon
988 Thorn
989 Deyo
990 Ingersoll
991 Fife
992 Fletcher
997 —

Frigates

FFG—Guided Missile Frigates

"Brooke" Class
1 Brooke
2 Ramsey
3 Schofield
4 Talbot
5 Richard L. Page
6 Julius A. Furer

"Oliver Hazard Perry" Class
7 Oliver Hazard Perry
8 McInerney
9 Wadsworth
10 Duncan
11 Clark
12 George Philip
13 Samuel Eliot Morison
14 Sides
15 Estocin
16 Clifton Sprague
19 John A. Moore
20 Antrim
21 Flatley
22 Fahrion
23 Lewis B. Puller
24 Jack Williams
25 Copeland
26 Gallery
27 Mahlon S. Tinsdale
28 Boone
29 Stephen W. Groves
30 Reid
31 Stark
32 John L. Hall
33 Jarrett
34 Aubrey Fitch
36 Underwood
37 Crommelin
38 Kurts
39 —
40 Halyburton
41 —

FF—Frigates

"Bronstein" Class
1037 Bronstein
1038 McCloy

"Garcia" Class
1040 Garcia
1041 Bradley
1043 Edward McDonnell
1044 Brumby
1045 Davidson
1047 Voge
1048 Sample
1049 Koelsch
1050 Albert David
1051 O'Callahan

"Knox" Class
1052 Knox
1053 Roark
1054 Gray
1055 Hepburn
1056 Connole
1057 Rathburne
1058 Mayerkord
1059 W. S. Sims
1060 Lang
1061 Patterson
1062 Whipple
1063 Reasoner
1064 Lockwood
1065 Stein
1066 Marvin Shields
1067 Francis Hammond
1068 Vreeland
1069 Bagley
1070 Downes
1071 Badger
1072 Blakely
1073 Robert E. Peary
1074 Harold E. Holt
1075 Trippe
1076 Fanning
1077 Ouellet

1078 Joseph Hewes
1079 Bowen
1080 Paul
1081 Aylwin
1082 Elmer Montgomery
1083 Cook
1084 McCandless
1085 Donald B. Beary
1086 Brewton
1087 Kirk
1088 Barbey
1089 Jesse L. Brown
1090 Ainsworth
1091 Miller
1092 Thomas C. Hart
1093 Capodanno
1094 Pharris
1095 Truett
1096 Valdez
1097 Moinester

"Glover" Class
1098 Glover

Patrol Ships and Craft

PCH—Patrol Craft (Hydrofoil)

"High Point" Class
1 High Point

PG—Patrol Combatants

"Asheville" Class
92 Tacoma
93 Welch
99 Beacon
101 Green Bay

PHM—Guided Missile Patrol Combatants (Hydrofoil)

"Pegasus" Class
1 Pegasus
2 Hercules
3 Taurus
4 Aquila
5 Aries
6 Gemini

Amphibious Warships

LCC—Amphibious Command Ships (Ex-AGC)

"Blue Ridge" Class
19 Blue Ridge
20 Mount Whitney

LHA—Amphibious Assault Ships (General Purpose)

"Tarawa" Class
1 Tarawa
2 Saipan
3 Belleau Wood
4 Nassau
5 Pelileu

LKA—Amphibious Cargo Ships

"Tulare" Class
112 Tulare

"Charleston" Class
113 Charleston
114 Durham
115 Mobile
116 St. Louis
117 El Paso

LPD—Amphibious Transport Docks

"Raleigh" Class
1 Raleigh
2 Vancouver

"Austin" Class
4 Austin
5 Ogden
6 Duluth
7 Cleveland
8 Dubuque
9 Denver
10 Juneau
12 Shreveport
13 Nashville
14 Trenton
15 Ponce

LPH—Amphibious Assault Ships (Helicopter)

"Iwo Jima" Class
2 Iwo Jima
3 Okinawa
7 Guadalcanal
9 Guam
10 Tripoli
11 New Orleans
12 Inchon

LSD—Dock Landing Ships

"Thomaston" Class
28 Thomaston
29 Plymouth Rock
30 Fort Snelling
31 Point Defiance
32 Spiegel Grove
33 Alamo
34 Hermitage
35 Monticello

"Anchorage" Class
36 Anchorage
37 Portland
38 Pensacola
39 Mt Vernon
40 Fort Fisher

LST—Tank Landing Ships

"De Soto County" Class
1173 Suffolk County
1177 Lorain County
1178 Wood County

"Newport" Class
1179 Newport
1180 Manitowoc
1181 Sumter
1182 Fresno
1183 Peoria
1184 Frederick
1185 Schenectady
1186 Cayuga
1187 Tuscaloosa
1188 Saginaw
1189 San Bernardino
1190 Boulder
1191 Racine
1192 Spartanburg County
1193 Fairfax County
1194 La Moure County
1195 Barbour County
1196 Harlan County
1197 Barnstable County
1198 Bristol County

Mine Warfare Ships

MSO—Ocean Minesweepers

"Aggressive" and "Dash" Classes
427 Constant
428 Dash
429 Detector
430 Direct
431 Dominant
433 Engage
437 Enhance
438 Esteem
439 Excel
440 Exploit
441 Exultant
442 Fearless
443 Fidelity
446 Fortify
448 Illusive
449 Impervious
455 Implicit
456 Inflict
464 Pluck
488 Conquest
489 Gallant
490 Leader
492 Pledge

"Acme" Class
509 Adroit
511 Affray

Auxiliary Ships

AD—Destroyer Tenders

"Dixie" Class
14 Dixie
15 Prairie
17 Piedmont
18 Sierra
19 Yosemite

"Klondike" and "Shenandoah" Classes
24 Everglades
36 Bryce Canyon

"Samuel Gompers" Class
37 Samuel Gompers
38 Puget Sound

"Yellowstone" Class
41 Yellowstone
42 Acadia
43 Cape Cod
44 Shenandoah

AE—Ammunition Ships

"Suribachi" Class
21 Suribachi
22 Mauna Kea
23 Nitro
24 Pyro
25 Haleakala

"Kilauea" Class
26 Kilauea (MSC)
27 Butte
28 Santa Barbara
29 Mount Hood
32 Flint
33 Shasta
34 Mount Baker
35 Kiska

AFS—Combat Store Ships

"Mars" Class
1 Mars
2 Sylvania
3 Niagara Falls
4 White Plains
5 Concord
6 San Diego
7 San Jose

AG—Miscellaneous

"Compass Island" Class
153 Compass Island

"Glomar Explorer" Class
193 ex-Hughes Glomar Explorer

AGF—Miscellaneous Flagships

3 La Salle
11 Coronado

AH—Hospital Ship

17 Sanctuary

AO—Oilers

"Jumboised Cimarron" Class
51 Ashtabula
98 Caloosahatchee
99 Canisteo

"Cimarron" Class
177 Cimarron
178 Monongahela
179 Merrimack
180 Willamette
186 Platte

AOE—Fast Combat Support Ships

"Sacramento" Class
1 Sacramento
2 Camden
3 Seattle
4 Detroit

AOR—Replenishment Oilers

"Wichita" Class
1 Wichita
2 Milwaukee
3 Kansas City
4 Savannah
5 Wabash
6 Kalamazoo
7 Roanoke

AP—Transports

"General John Pope" Class
110 General John Pope
117 General W. H. Gordon
119 General William Weigel

"Admiral W. S. Benson" Class
122 General Alexander M. Patch
123 General Simon B. Buckner
125 General Nelson M. Walker
126 General Maurice Rose
127 ex-General William O. Darby

AR—Repair Ships

"Vulcan" Class
5 Vulcan
6 Ajax
7 Hector
8 Jason

ARL—Repair Ship, Small

"Achelous" Class
24 Sphinx

ARS—Salvage Ships

"Diver" and "Bolster" Classes
8 Preserver
33 Clamp
34 Gear
38 Bolster
39 Conserver
40 Hoist
41 Opportune
42 Reclaimer
43 Recovery

AS—Submarine Tenders

"Fulton" Class
11 Fulton
12 Sperry
17 Nereus
18 Orion

"Proteus" Class
19 Proteus

"Hunley" Class
31 Hunley
32 Holland

"Simon Lake" Class
33 Simon Lake
34 Canopus

"L.Y. Spear" Class
36 L.Y. Spear
37 Dixon

"Emory S. Land" Class
39 Emory S. Land
40 Frank Cable
41 McKee

ASR—Submarine Rescue Ships

"Chanticleer" Class
9 Florikan
13 Kittiwake
14 Petrel
15 Sunbird

"Pigeon" Class
21 Pigeon
22 Ortolan

ATA—Auxiliary Tug

"Sotoyomo" Class
181 Accokeek

ATF—Fleet Tugs

"Cherokee" and "Abnaki" Classes
91 Seneca
105 Moctobi
110 Quapaw
113 Takelma
149 Atakapa
158 Mosospelea
159 Paiute
160 Papago

ATS—Salvage and Rescue Ships

"Edenton" Class
1 Edenton
2 Beaufort
3 Brunswick

IX—Miscellaneous

"Sailing Frigate"
ex-21 Constitution

USCG "Cosmos" Class
307 Brier

Army "FS Type"
306 —
308 New Bedford (ex-AKL)

"Barge Type"
311 —

"Elk River" Class
501 Elk River (ex-LSMR)

"Benewah" Class
502 Mercer (ex-APB 39)
503 Nueces (ex-APB 40)
504 Echols (ex-APB 37)

"YFU 71" Class
506 — (ex-YFU 82)

"Admiral W. S. Benson" Class
507 General Hugh J. Gaffey

"LCU 1466" Class
508 — (ex-LCU 1618)

Unknown Class
509 —

Military Sealift Command

Note: All ships of MSC have T prefix.

AF—Store Ship

"Rigel" Class
58 Rigel

AFS—Combat Store Ship
Ex-British "Lyness" Class
8 Sirius

AG—Miscellaneous

"Kingsport" Class
164 Kingsport

Converted "Mission" Class
194 Vanguard

AGM—Range Instrumentation Ships

Converted C4-S-A1 Type
9 General H. H. Arnold
10 General Hoyt S. Vandenberg

Converted "Mission" Class
20 Redstone

Converted "Haskell" Class
22 Range Sentinel

Converted "Compass Island" Class
23 Observation Island

AGOR—Oceanographic Research Ships

"Robert D. Conrad" Class
3 Robert D. Conrad
4 James M. Gilliss
7 Lynch
9 Thomas G. Thompson
12 De Steiguer
13 Bartlett

"Melville" Class
14 Melville
15 Knorr

"Eltanin" Class
8 Eltanin
11 Mizar

"Hayes" Class
16 Hayes

"Gyre" Class
21 Gyre
22 Moana Wave

AGS—Surveying Ships

Converted "Victory" Type
21 Bowditch
22 Dutton

"Silas Bent" Class
26 Silas Bent
27 Kane

Converted "Chauvenet" Class
29 Chauvenet
32 Harkness

"Wilkes" Class
33 Wilkes
34 Wyman

Converted C4-S-A1 Type
38 H. H. Hess

AK—Cargo Ships

"Greenville Victory" Class
240 Pvt. John R. Towle

"Private Leonard C. Brostrom" Class
255 Pvt. Leonard C. Brostrom

"Eltanin" Class
271 Mirfak

"Norwalk" Class
280 Furman
281 Victoria
282 Marshfield

"Wyandot" Class
283 Wyandot

"Northern Light" Class
284 Northern Light
285 Southern Cross
286 Kings Bay

AKR—Vehicle Cargo Ships

"Comet" Class
7 Comet

"Meteor" Class
9 Meteor

"Jupiter" Class
10 Jupiter
11 Mercury

AO—Oilers

"Cimarron" Class
57 Marias
62 Taluga

"Jumboised Mispillion" Class
105 Mispillion
106 Navasota
107 Pasumpsic
108 Pawcatuck
109 Waccamaw

"Neosho" Class
143 Neosho
144 Mississinewa
145 Hassayampa
146 Kawishiwi
147 Truckee
148 Ponchatoula

AOT—Transport Oilers

"Suamico" Class
50 Tallulah
67 Cache
73 Millicoma
75 Saugatuck
76 Schuylkill

"Mission" Class
134 Mission Santa Ynez

"Maumee" Class
149 Maumee
151 Shoshone
152 Yukon

"American Explorer" Class
165 American Explorer

"Sealift" Class
168 Sealift Pacific
169 Sealift Arabian Sea
170 Sealift China Sea
171 Sealift Indian Oceun
172 Sealift Atlantic
173 Sealift Mediterranean
174 Sealift Caribbean
175 Sealift Arctic
176 Sealift Antarctic

"Potomac" Class
181 Potomac

"Columbia" Class
182 Columbia
183 Neches
184 Hudson
185 Susquehanna

AOG—Gasoline Tankers

"Peconic" Class
77 Rincon
78 Nodaway
79 Petaluma

"Alatna" Class
81 Alatna
82 Chattahoochee

ARC—Cable Ships

"Neptune" Class
2 Neptune
6 Albert J. Meyer

"Aeolus" Class
3 Aeolus

ATF—Fleet Ocean Tugs

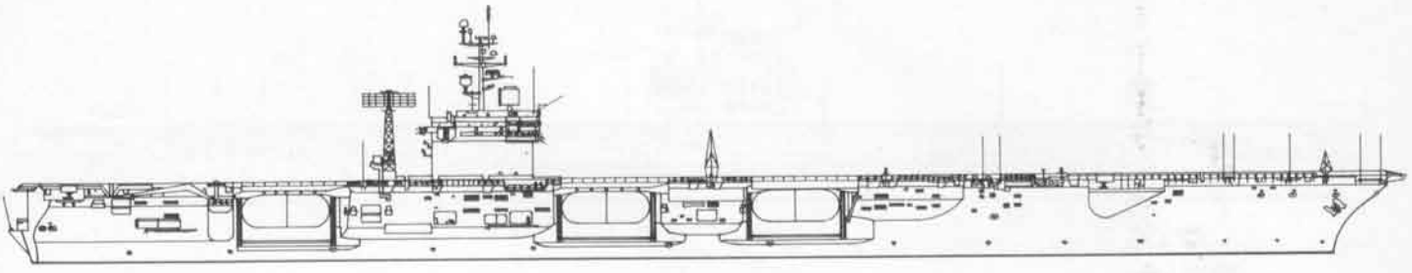
"Powhatan" Class
166 Powhatan
167 Narragansett
168 Catawba
169 Navajo
170 Mohawk
171 Sioux
172 Apache

MAJOR MILITARY SEALIFT COMMAND LONG-TERM CHARTERED SHIPS

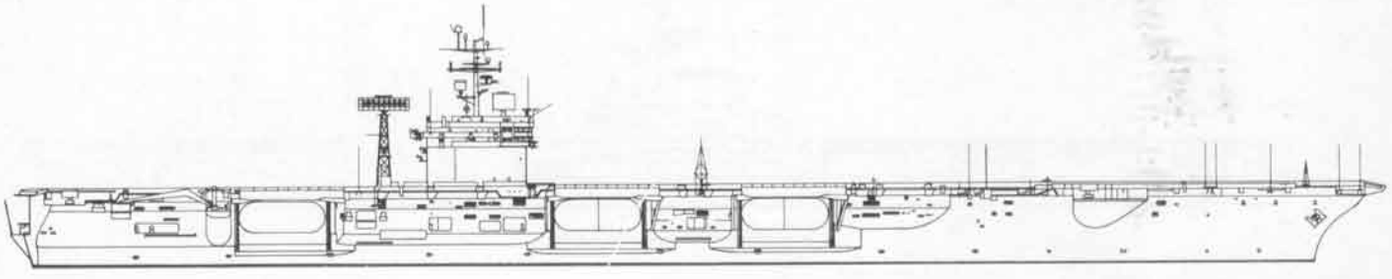
Name	*Date Chartered*	*Expires*	*Owner/Operator*
BUILDER (AK)	4 Mar 1980	4 Mar 1982	Central Gulf Lines
BAY (AK)	1 Apr 1980	1 Apr 1982	Central Gulf Lines
BUYER (AK)	1 May 1980	1 May 1982	Central Gulf Lines
DAWN (AK)	3 Mar 1980	3 Mar 1982	Central Gulf Lines
GULF SHIPPER (AK)	2 Mar 1980	1 Mar 1982	Lykes Brothers
GULF TRADER (AK)	12 Mar 1980	12 Mar 1982	Lykes Brothers
MALLORY LYKES (AK)	24 May 1980	24 May 1982	Lykes Brothers
MASON LYKES (AK)	16 June 1980	16 June 1982	Lykes Brothers
AMERICAN CHALLENGER (AK)	25 Sep 1971	25 Sep 1981	United States Lines
AMERICAN CHARGER (AK)	19 Aug 1971	18 Aug 1981	United States Lines
AMERICAN CHIEFTAIN (AK)	20 Aug 1971	19 Aug 1981	United States Lines
AMERICAN CORSAIR (AK)	1 Sep 1971	31 Aug 1981	United States Lines
AMERICAN RACER (AK)	30 Aug 1971	8 Nov 1981	United States Lines
AMERICAN RANGER (AK)	11 Sep 1971	27 Sep 1981	United States Lines
AMERICAN RELIANCE (AK)	8 Aug 1971	19 Dec 1981	United States Lines
PIONEER CONTENDER (AK)	18 Aug 1971	17 Aug 1981	United States Lines
PIONEER MOON (AK)	2 Sep 1971	1 Sep 1981	United States Lines
TRANSCOLORADO (containership)	26 July 1968	25 July 1982	Hudson Waterways Corp
TRANSCOLUMBIA (containership)	3 Oct 1968	2 Oct 1981	Hudson Waterways Corp
TAMARA GUILDEN (bulk carrier)	12 July 1980	13 Dec 1981	Transport Commercial Co
OVERSEAS HARRIET (bulk carrier)	1 June 1980	1 Nov 1981	Ocean Bulk Ships
SPIRIT OF LIBERTY (AOT)	6 Oct 1968	Apr 1984	Charles Kurz & Co, Inc
TEXAS TRADER (AOT)	Nov 1980	Nov 1985	American Trading Transportation Co, Inc
COVE TIDE (AOT)	12 Aug 1971	Aug 1981	Cove Ship Inc
LOUISIANA GETTY (AOT)	24 Oct 1980	22 Apr 1981	Getty Ref & Mark Co
NEW YORK SUN (AOT)	Jan 1981	Jan 1985	Sun Transport Inc
BLACK SEA II (AGOR)	not available	1 Oct 1981	Captain R. Lloyd
ENERGY SERVICE I (AGOR)	1 Nov 1978	30 Oct 1981	Brazosport Marine Service Inc
CAPT. SANDY II (AGOR)	1 Oct 1979	30 Sep 1981	Sandy Ware
EMPRESS (AGOR)	(open ended contract)		Captain William C. Norton
MONARCH (ARC)	14 Nov 1980	not available	British Post Office

Note: **AMERICAN COURIER** (AK), **AMERICAN CHAMPION** (AK), **PATRIOT** (AW), **CYGNUS** (AKR), **LYRA** (AKR) and **ADMIRAL WILLIAM M. CALLAGHAN** (AKR) are also chartered ships. Because the first three listed ships are assigned to the Interim Rapid Deployment Force and the significant military value of the last three ships, all have received a "class" textual write up as if they were naval ships on the Naval Vessel Register (NVR).

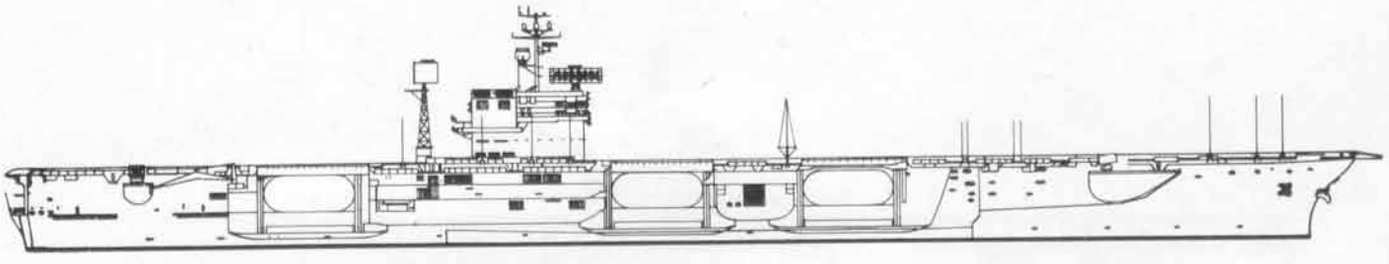
AIRCRAFT CARRIERS



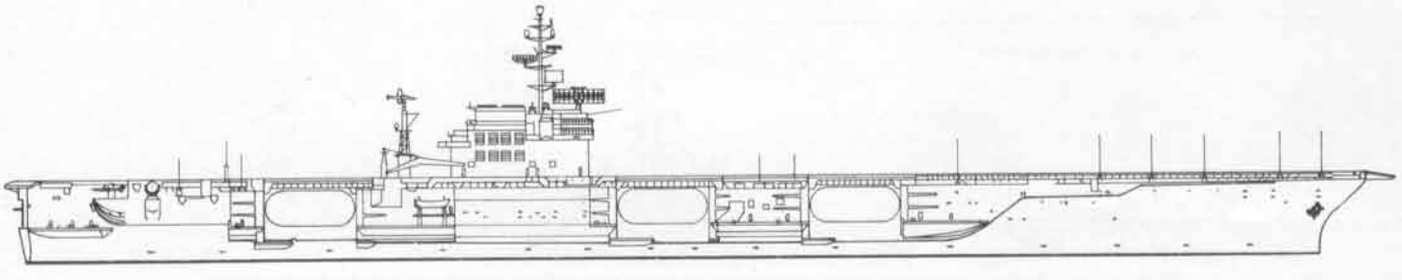
DWIGHT D. EISENHOWER (CVN 69)



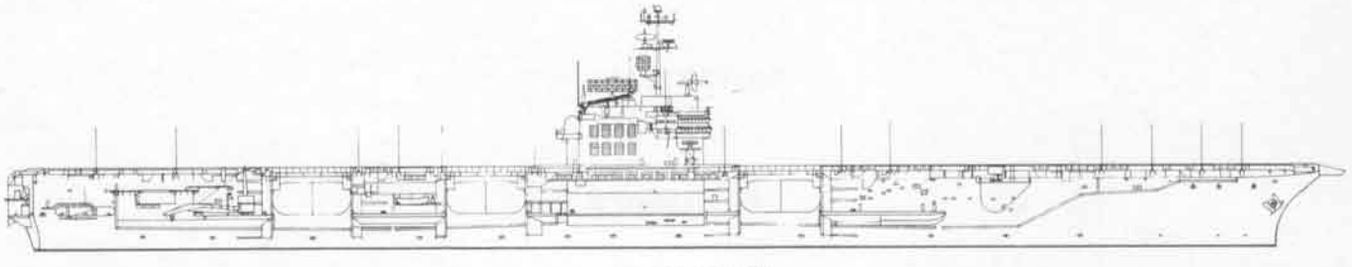
NIMITZ (CVN 68)



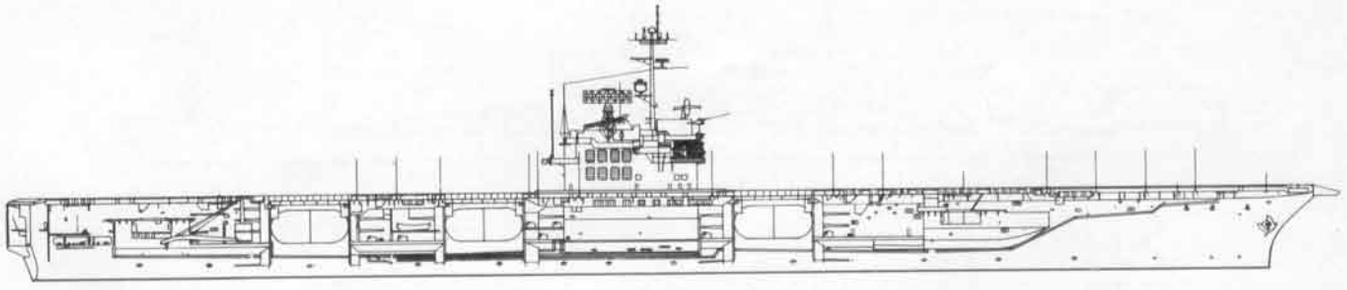
JOHN F. KENNEDY (CV 67)



KITTY HAWK (CV 63)



INDEPENDENCE (CV 62)



RANGER (CV 61)

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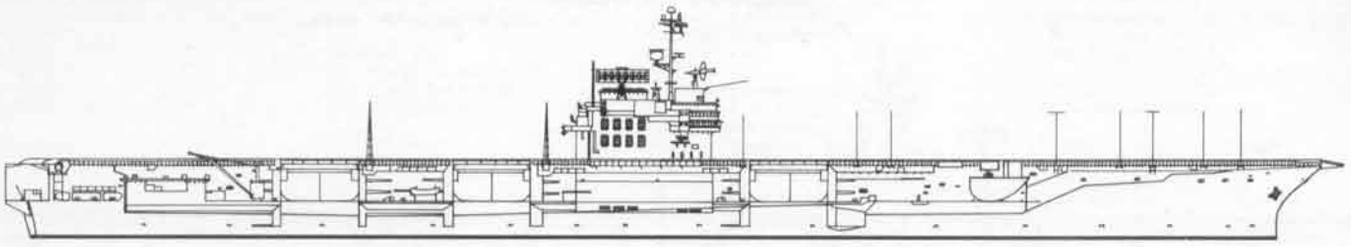


SARATOGA (CV 60)

CORAL SEA (CV 43) "Midway" Class

MIDWAY (CV 41)

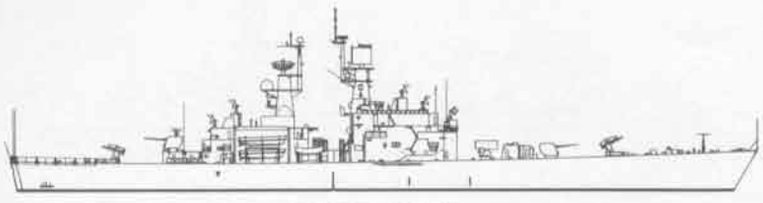
"HANCOCK" Class

BATTLESHIPS

NEW JERSEY (BB 62)

Scale: 1 : 1 800

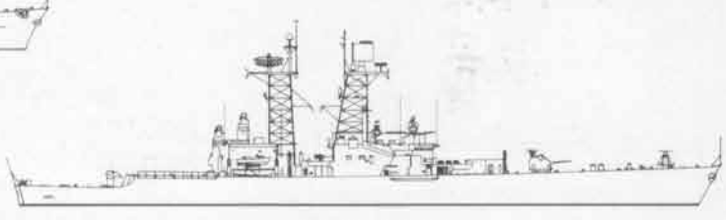
CRUISERS



CALIFORNIA (CGN 36)

VIRGINIA (CGN 38)

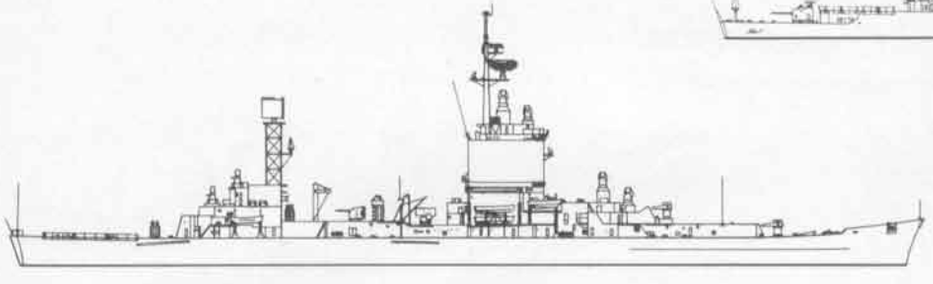
BAINBRIDGE (CGN 25)



TRUXTUN (CGN 35)

LEAHY (CG 16)

WAINWRIGHT (CG 28)

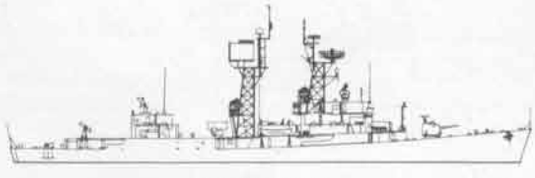


LONG BEACH (CGN 9) after 1981-82 reconstruction

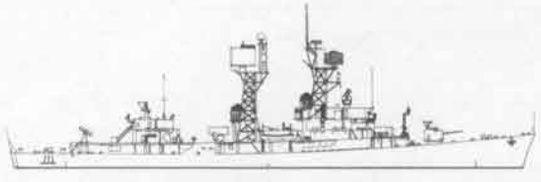
DESTROYERS

LUCE (DDG 38) "Coontz" Class

FARRAGUT (DDG 37) "Coontz" Class

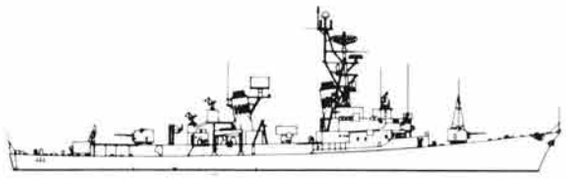


DECATUR (DDG 31)

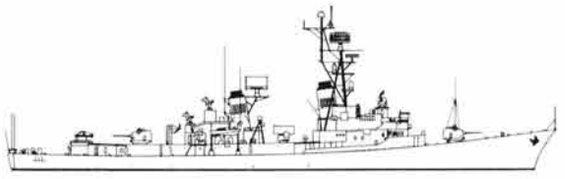


SOMERS (DDG 34) Converted "Forrest Sherman" Class

Scale: 1 : 1 800

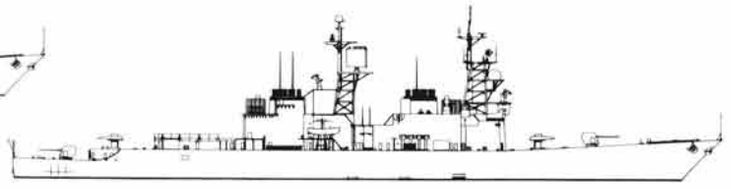


WADDELL (DDG 24) "Charles F. Adams" Class

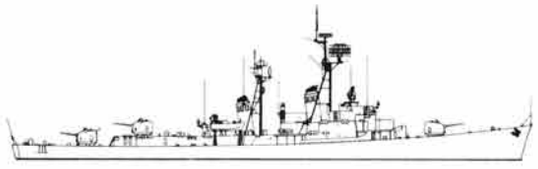


BARNEY (DDG 6) "Charles F. Adams" Class

SPRUANCE (DD 963)



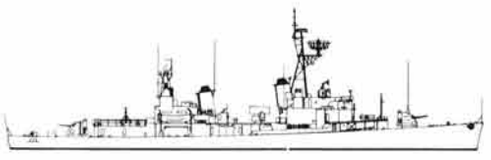
"KIDD" Class (DDG 993)



TURNER JOY (DD 951) "Forrest Sherman" Class

JONAS INGRAM (DD 938) "Forrest Sherman" Class (ASW)

BARRY (DD 933) "Forrest Sherman" Class (ASW)



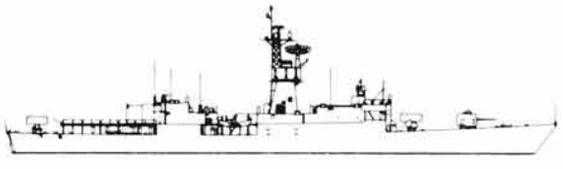
"GEARING" Class FRAM I (all guns forward and aft)

ROBERT A. OWENS (DD 827) "Carpenter" Class FRAM I

FRIGATES

BAGLEY (FF 1069)

OLIVER HAZARD PERRY (FFG 7)

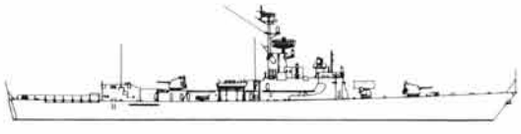


"KNOX" Class (improved)

McINERNEY (FFG 8) (RAST Trials Ship)

DOWNES (FF 1070) (NATO Sea Sparrow/Mk 23 Trials Ship)

JULIUS A. FURER (FFG 6) "Brooke" Class



SAMPLE (FF 1048) "Garcia" Class

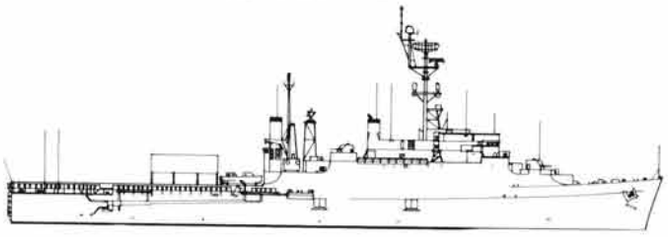
"GARCIA" Class (LAMPS Modification)

BRONSTEIN (FF 1037)

GLOVER (FF 1098)

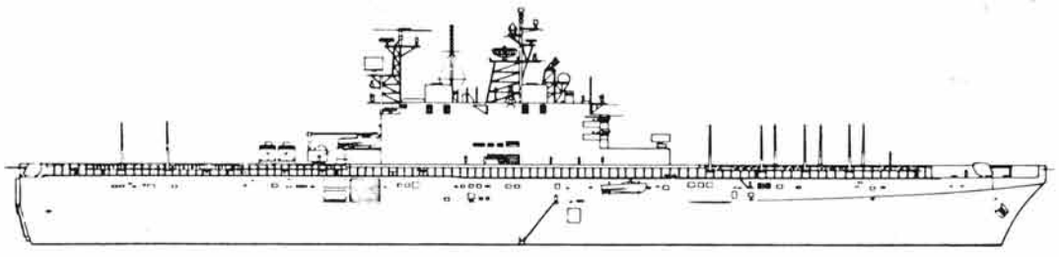
Scale: 1 : 1 800

COMMAND SHIP

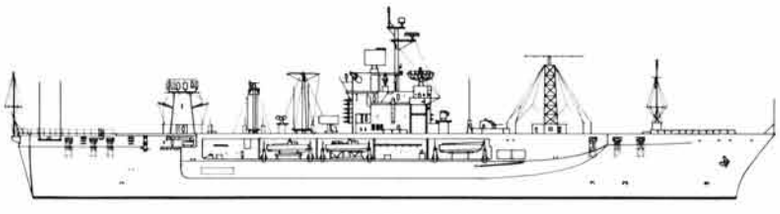


LA SALLE (AGF 3)

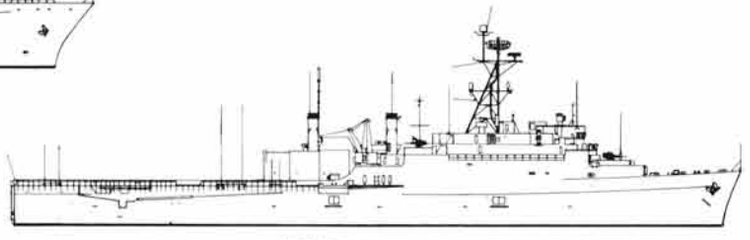
AMPHIBIOUS WARFARE SHIPS



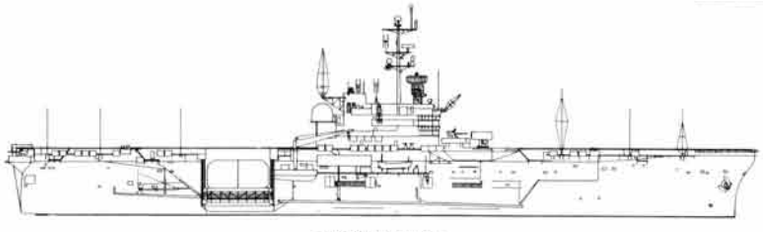
TARAWA (LHA 1)



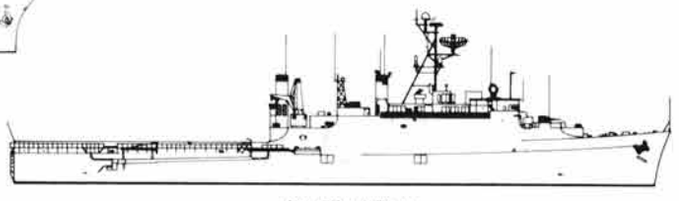
BLUE RIDGE (LCC 19)



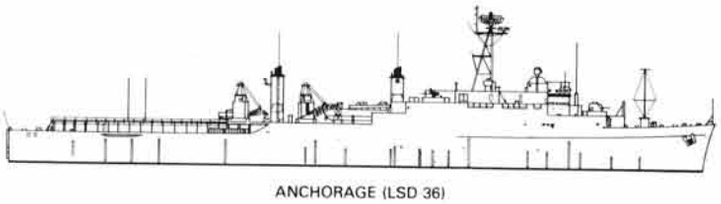
NASHVILLE (LPD 13)



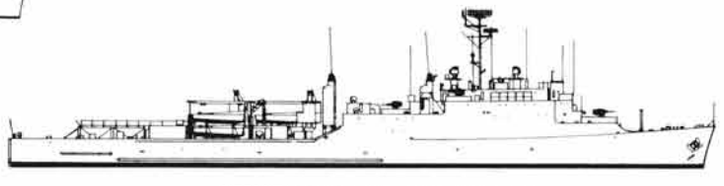
TRIPOLI (LPH 10)



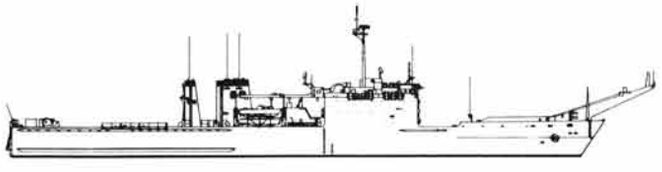
RALEIGH (LPD 1)



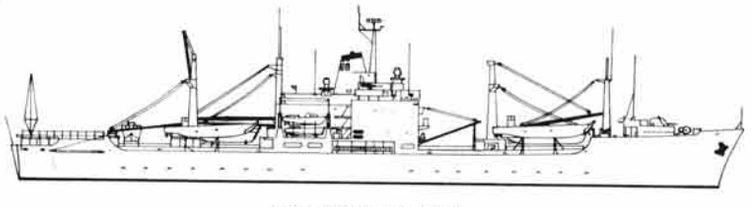
ANCHORAGE (LSD 36)



HERMITAGE (LSD 34) "Thomaston" Class



NEWPORT (LST 1179)



CHARLESTON (LKA 113)

Scale: 1 : 1 800

MINE WARFARE and PATROL SHIPS and CRAFT

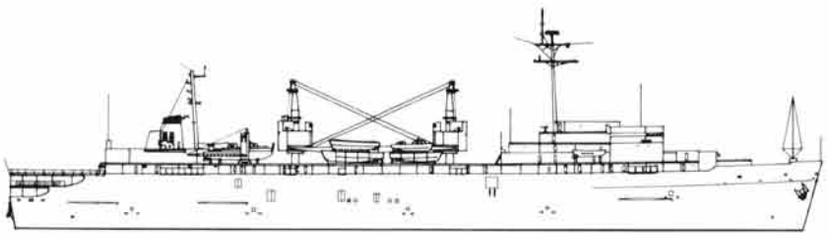
PEGASUS (PHM 1)

"ASHEVILLE" Class

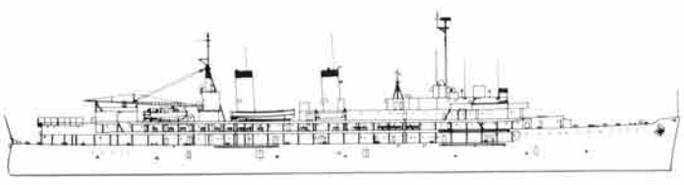
"AGGRESSIVE" Class MSO

Scale: 1 : 1 200

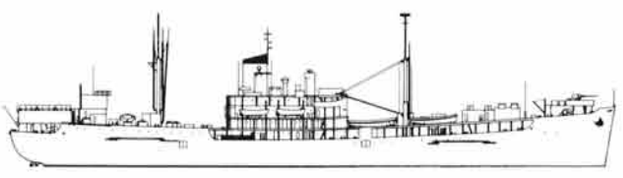
AUXILIARY SHIPS



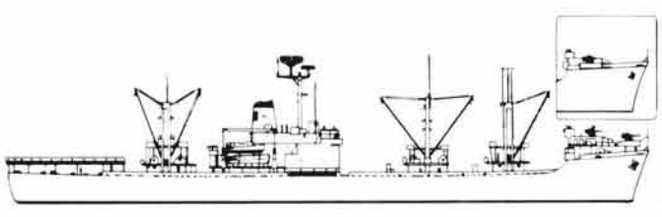
"SAMUEL GOMPERS" Class



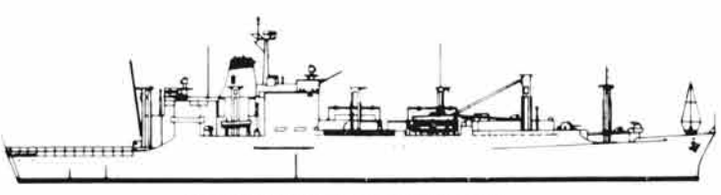
YOSEMITE (AD 19) "Dixie" Class



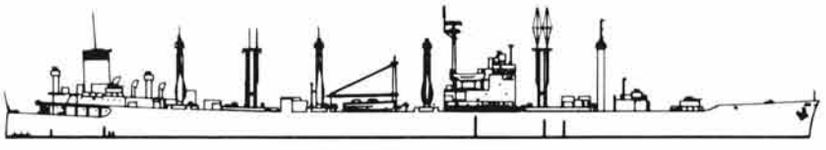
BRYCE CANYON (AD 26) "Shenandoah" Class



MAUNA KEA (AE 22) "Suribachi" Class
(inset shows gun variation)

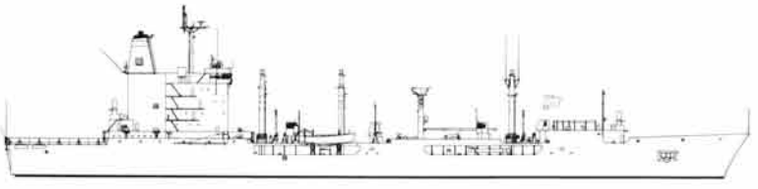


SANTA BARBARA (AE 28) "Kilauea" Class

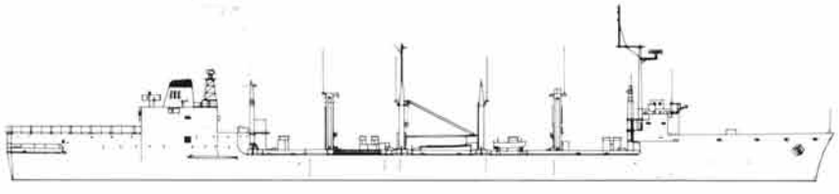


CANISTEO (AO 99) Jumboised T3-S2-A1

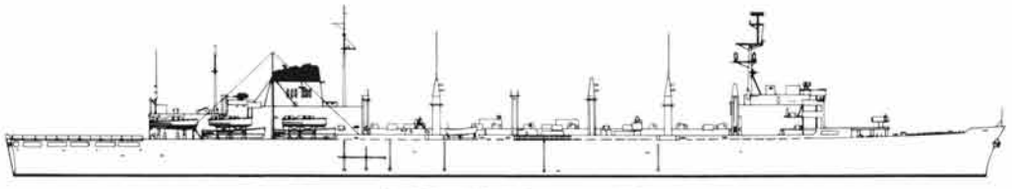
MARS (AFS 1)



CIMARRON (AO 177)

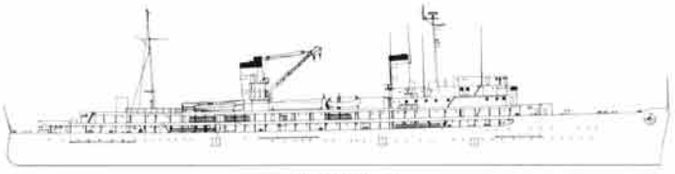


ROANOKE (AOR 7) "Wichita" Class

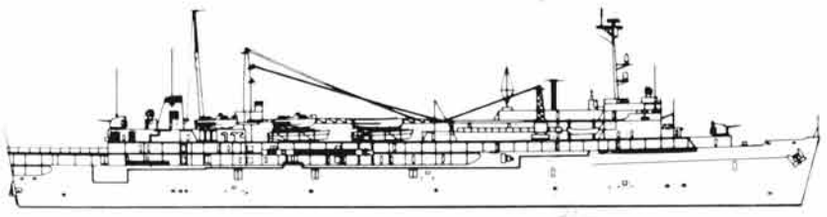


CAMDEN (AOE 2) "Sacramento" Class

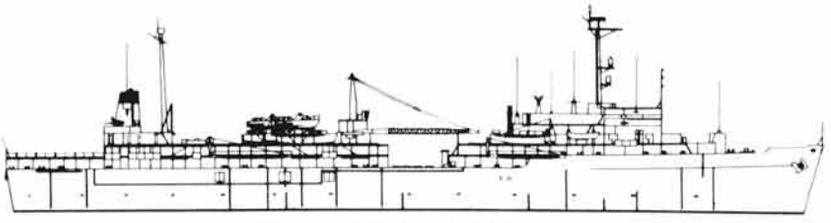
Scale: 1 : 1 800



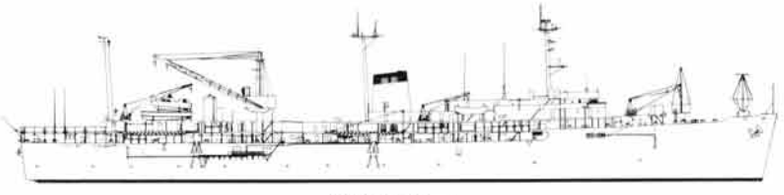
VULCAN (AR 5)



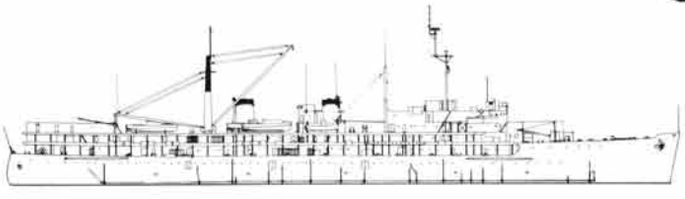
L. Y. SPEAR (AS 36)



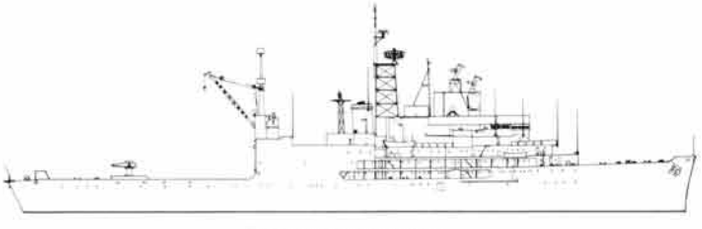
CANOPUS (AS 34) "Simon Lake" Class



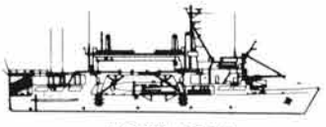
HUNLEY (AS 31)



HOWARD W. GILMORE (AS 16) "Fulton" Class

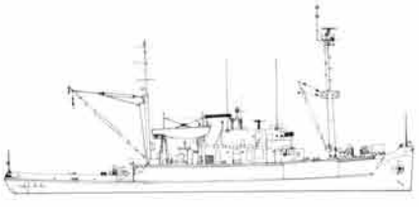


NORTON SOUND (AVM 1)



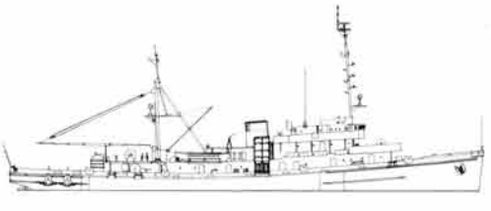
PIGEON (ASR 21)

Scale: 1 : 1 800



CONSERVER (ARS 39)

"ARS 50" Class



SUNBIRD (ASR 15)

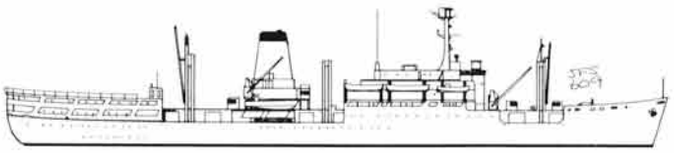
"ABNAKI" Class ATF

EDENTON (ATS 1)

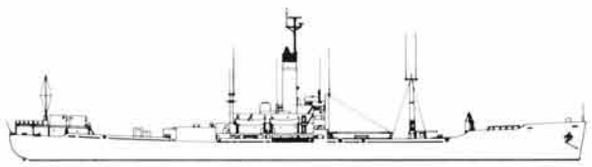
Scale: 1 : 1 200

MILITARY SEALIFT COMMAND

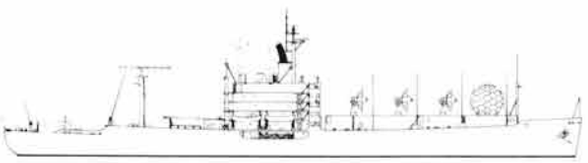
RIGEL (T-AF 58)



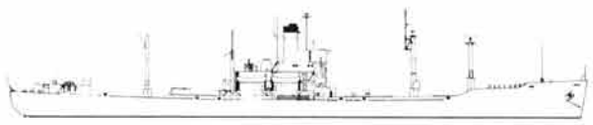
SIRIUS (T-AFS 8)



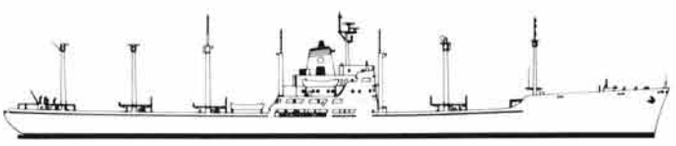
KINGSPORT (T-AG 164)



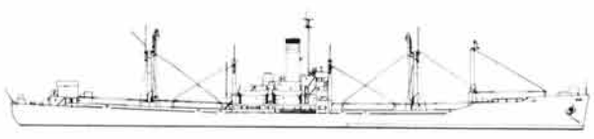
RANGE SENTINEL (T-AGM 22)



BOWDITCH (T-AGS 21)
DUTTON (T-AGS 22)

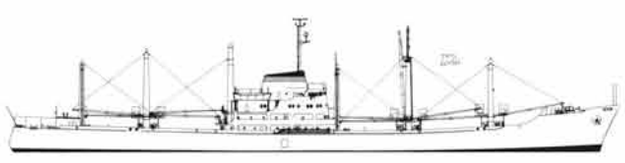


H. H. HESS (T-AGS 38)

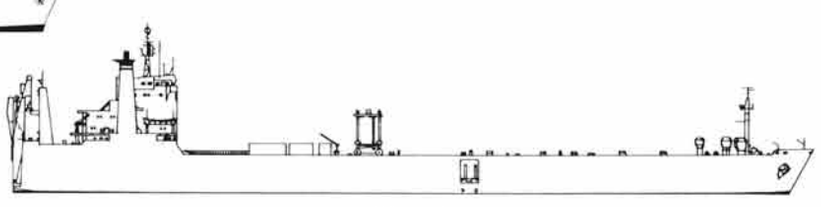


PVT. JOHN R. TOWLE (T-AK 240)

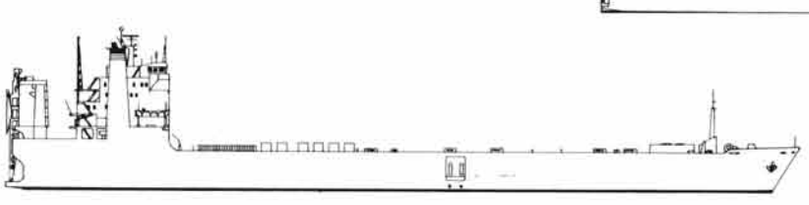
MARSHFIELD (T-AK 282) "Norwalk" Class



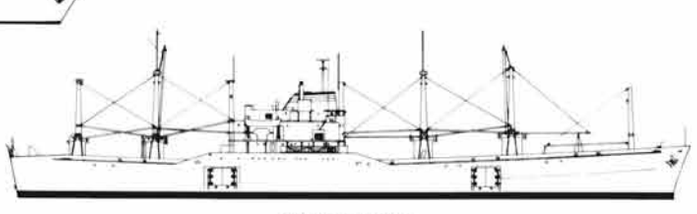
NORTHERN LIGHT (T-AK 285)



LYRA (T-AKR)

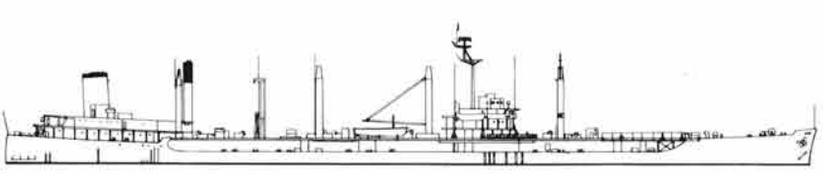


CYGNUS (T-AKR)

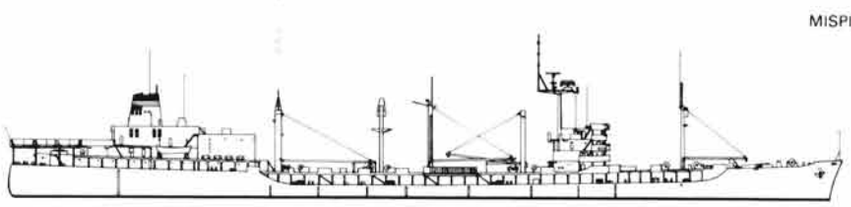


COMET (T-AKR 9)

MERCURY (T-AKR 11)



MISPILLION (T-AO 105) Jumboised "Mispillion" Class



MISSISSINEWA (T-AO 144) "Neosho" Class

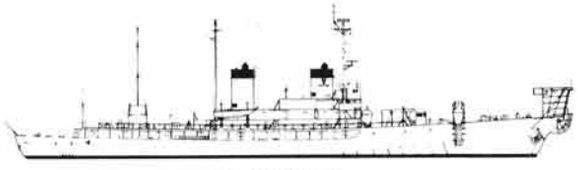
Scale: 1 : 1 800

MAUMEE (T-AOT 149) "Maumee" Class

SEALIFT PACIFIC (T-AOT 168) "Sealift" Class

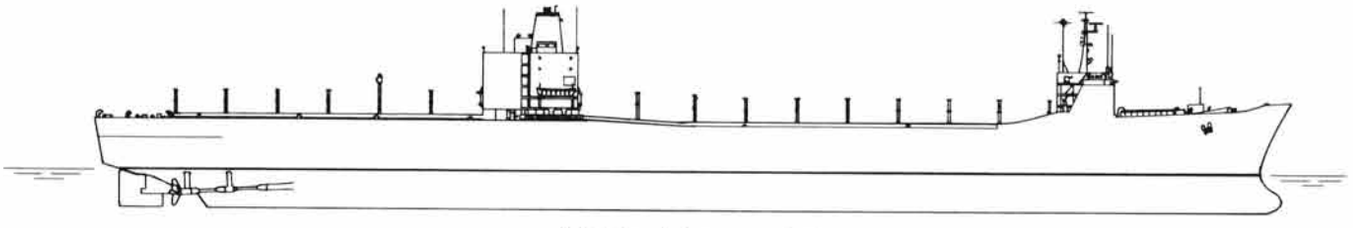
POTOMAC (T-AOT 181)

COLUMBIA (T-AOT 182) "Columbia" Class



AEOLUS (T-ARC 3)

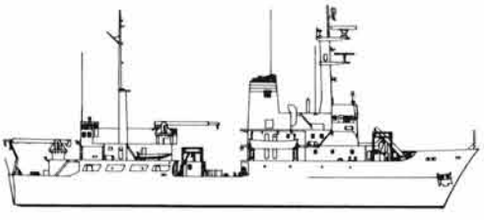
PATRIOT



"SL-7" Class (prior to conversion)

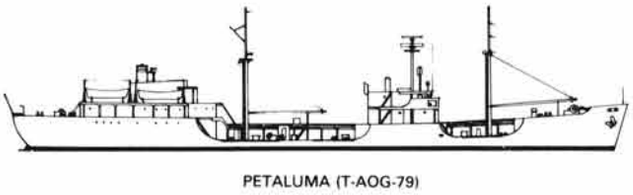
Scale: 1 : 1 800

LYNCH (T-AGOR-7)



HAYES (T-AGOR-16)

WILKES (T-AGS-33)



PETALUMA (T-AOG-79)

GYRE (AGOR 21)
MOANA WAVE (AGOR 22)

Scale: 1: 1 200

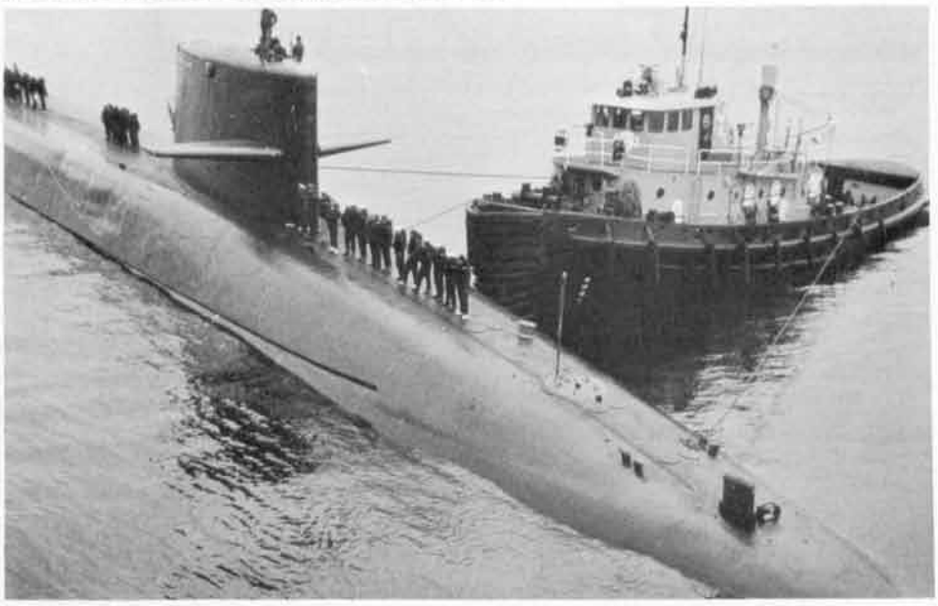
All drawings by A. D. Baker III

SUBMARINES
STRATEGIC MISSILE SUBMARINES (SSBN)

The current SSBN force, with the completion of the Poseidon and Trident conversions, provides over 5 000 separate warheads or "re-entry" vehicles, or about 55 per cent of US strategic warheads. (Each Poseidon missile is believed normally to carry ten separately targetable RVs).
All SSBNs in service will reach their 20th year of active service between 1983 and 1987. The urgency of the original SSBN programme will thus result in block obsolescence at this time causing a substantial decrease in overall SLBM capability in the late 1980s and early 1990s.
Both the "Ohio" and "Los Angeles" classes programmes have been repeatedly delayed by inadequate quality control according to Rear-Admiral James Webber, Deputy Head of Naval Sea Systems Command.

Trident programme: The Trident programme provides for an improved nuclear-propelled submarine and longer-range missiles. The Trident submarine is described below; the Trident I missile has a range of 4 350 n. miles. This missile will be installed in the new construction submarines and has been retrofitted in 12 of the Poseidon-armed submarines. The longer range (approx 6 000 n. mile) Trident II missile is under study. This weapon, which could be available in the mid-1980s, would also have a greater throw weight and accuracy than the Trident I.
When the Trident programme was initiated, the Navy planned to construct the first submarine with the Fiscal Year 1974 funding and three submarines each year thereafter for the initial ten SSBN class. However, in 1974 the Department of Defense slowed the rate to 1-2-2-2-2-1; in 1975 this was again revised to 1-2-1-2-1-2-1.
In early 1976 Secretary of Defense Donald H. Rumsfeld announced that for planning purposes additional submarines beyond the ten-submarine force would be procured at the 1-2-1-2 rate continuously consistent with Strategic Arms Limitation Talks (SALT) agreements.
In March 1978 Secretary of Defense Harold Brown further reduced the building rate to 1-1-1-1-1-2-1-2 beginning with the FY 1980 budget. This was done to allow the sole prime contractor, General Dynamics, to catch up with the programme which is now running 18-24 months behind delivery date schedules.
Under the new Administration of President Reagan it is planned to increase the building rate of the "Ohio" class from one per year to three every two years through FY 1985. This will add $1·38 billion to FY 1981 budget and a total of $2·58 billion through FY 1985.

Future SSBN programme: Proposals to develop a type of smaller Trident-carrying submarine from the "Los Angeles" or "Narwhal" classes of SSNs had been dropped because of the increased costs which would result.

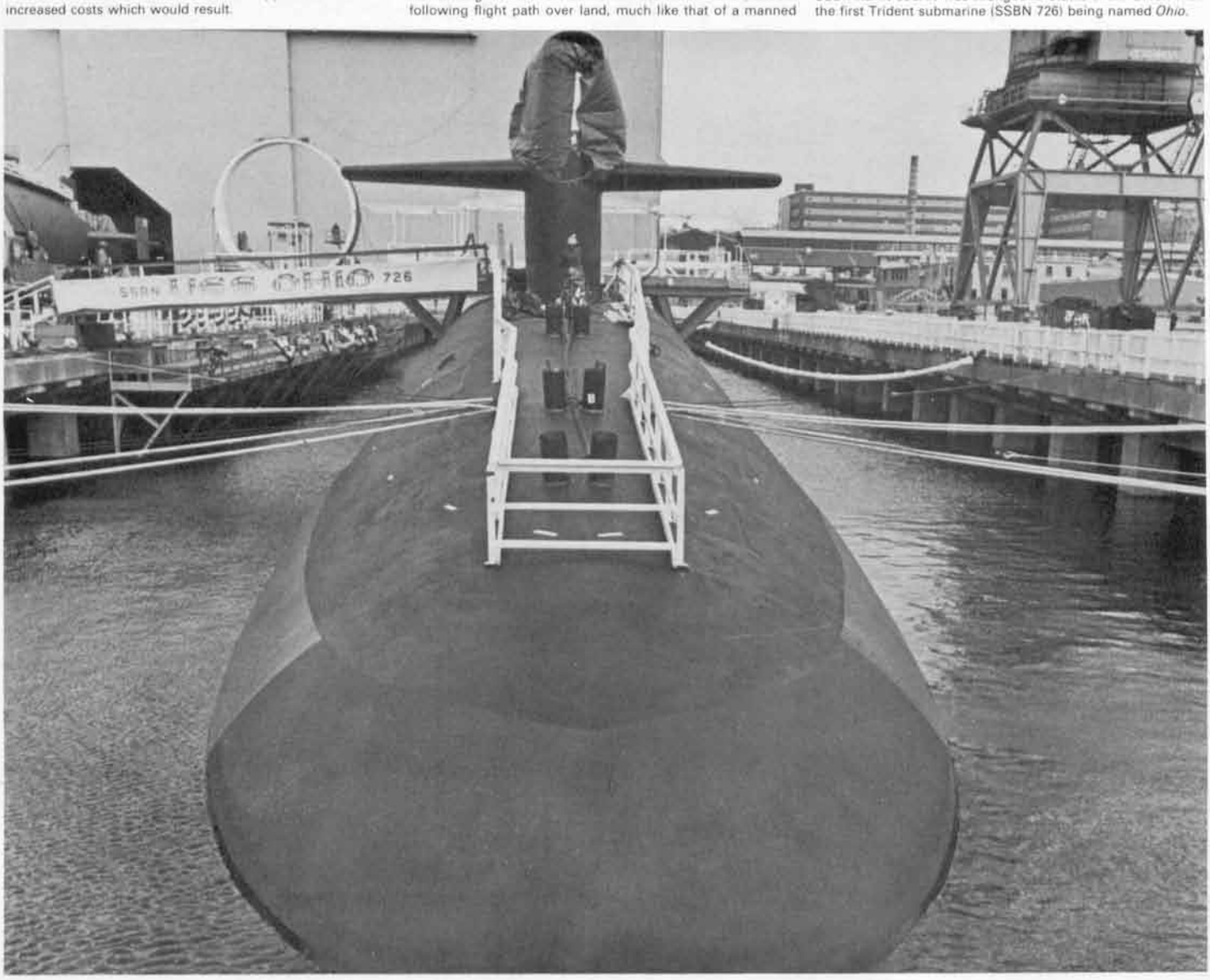


WILL ROGERS in Holy Loch, Scotland *1972, USN*

However, in 1978 studies for developing a new, but smaller SSBN were resumed. Tentatively called the SSBNX, $3 million was appropriated in 1979 for development and $10 million in FY 1980. However as no funds were forthcoming from FY 1981 budget the studies have been terminated.

Strategic Cruise Missiles: The US Navy is in advanced development of a strategic Sea-Launched Cruise Missile (SLCM) (Tomahawk). This is an underwater-launched weapon with ram-jet propulsion which could deliver nuclear warheads to a range of approximately 1 500 n. miles. A shorter-range (300 n. mile) version of the weapon with a conventional warhead is planned for use as an over-the-horizon anti-ship weapon.
The strategic cruise missile would have a low-level, terrain following flight path over land, much like that of a manned bomber in contrast to the ballistic trajectory of a Polaris/Poseidon/Trident missile.
Plans are being considered to convert the former Polaris tubes in eight former SSNs of the "Ethan Allen" and "George Washington" classes (now SSNs) to launch Tomahawk cruise missiles.

Names: US ballistic missile submarines (SSBN) have been named for "distinguished Americans who were known for their devotion to freedom" since 1958 when the Polaris submarine programme was initiated. Included as "Americans" were Latin American and Hawaiian leaders, and several Europeans who supported the American fight for independence. In 1976 the SSBN name source was changed to States of the Union with the first Trident submarine (SSBN 726) being named *Ohio*.



OHIO *4/1979, Electric Boat Division*

0 + 8 + 8 "OHIO" CLASS (BALLISTIC MISSILE SUBMARINES (SSBN))

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FiS*
OHIO	SSBN 726	General Dynamics (Electric Boat Div)	10 Apr 1976	7 Apr 1979	late 1981	Building
MICHIGAN	SSBN 727	General Dynamics (Electric Boat Div)	4 Apr 1977	26 Apr 1980	1981	Building
FLORIDA	SSBN 728	General Dynamics (Electric Boat Div)	9 June 1977	early 1981	mid-1982	Building
GEORGIA	SSBN 729	General Dynamics (Electric Boat Div)	7 Apr 1979	late 1981	early 1983	Building
RHODE ISLAND	SSBN 730	General Dynamics (Electric Boat Div)	—	mid-1982	late 1983	Ord
	SSBN 731	General Dynamics (Electric Boat Div)	—	mid-1983	mid-1984	Ord
	SSBN 732	General Dynamics (Electric Boat Div)	—	late 1983	mid-1985	Ord
	SSBN 733	General Dynamics (Electric Boat Div)				Ord
	SSBN 734	Approved FY 1981 programme				Proj
	SSBN 735	Requested FY 1982 programme				Proj
	SSBN 736	Proposed FY 1983 programme				Proj
	SSBN 737	Proposed FY 1984 programme				Proj
	SSBN 738	Proposed FY 1985 programme				Proj
	SSBN 739-741	Proposed FY 1986-89 programmes				

Displacement, tons: 16 600 surfaced; 18 700 dived
Dimensions, feet (metres): 560 × 42 × 35·5 *(170·7 × 12·8 × 10·8)*
Missiles: 24 tubes for Trident I Submarine-Launched Ballistic Missile (SLBM)
Torpedo tubes: 4—21 in *(533 mm)* Mk 68 (bow)
Main machinery: 1 pressurised-water cooled S8G (General Electric) reactor; geared turbines; 1 shaft; 60 000 shp
Complement: 133 (16 officers, 117 enlisted men)

These submarines will be the largest undersea craft yet constructed, being significantly larger than the Soviet "Delta" class missile submarines which are now the largest afloat. The lead submarine was contracted to the Electric Boat Division of the General Dynamics Corp (Groton, Connecticut) on 25 July 1974. The only other US shipyard currently capable of building submarines of this class is the Newport News S.B. & D.D. Co in Virginia.
A series of problems both in Washington and in the shipbuilding yards has resulted in progressive delays to this class. *Ohio* herself is scheduled to begin deployment from the Trident base at Bangor, Washington in late 1981.
Contract for long term lead-items on SSBN 733 and 734 awarded to General Dynamics on 6 February 1980.

Design: The size of the Trident submarine is dictated primarily by the larger size missile required for 4 or 6 000 mile range and the larger reactor plant to drive the ship. The submarine will have 24 tubes in a vertical position.
The principal characteristics of the Trident concept as proposed were: (1) long-range missile (eventually of 6 000 miles (Trident II)) to permit targeting the Soviet Union while the submarine cruises in remote areas, making effective ASW virtually impossible for the foreseeable future, (2) extremely quiet submarines, (3) a high at-sea to in-port ratio.

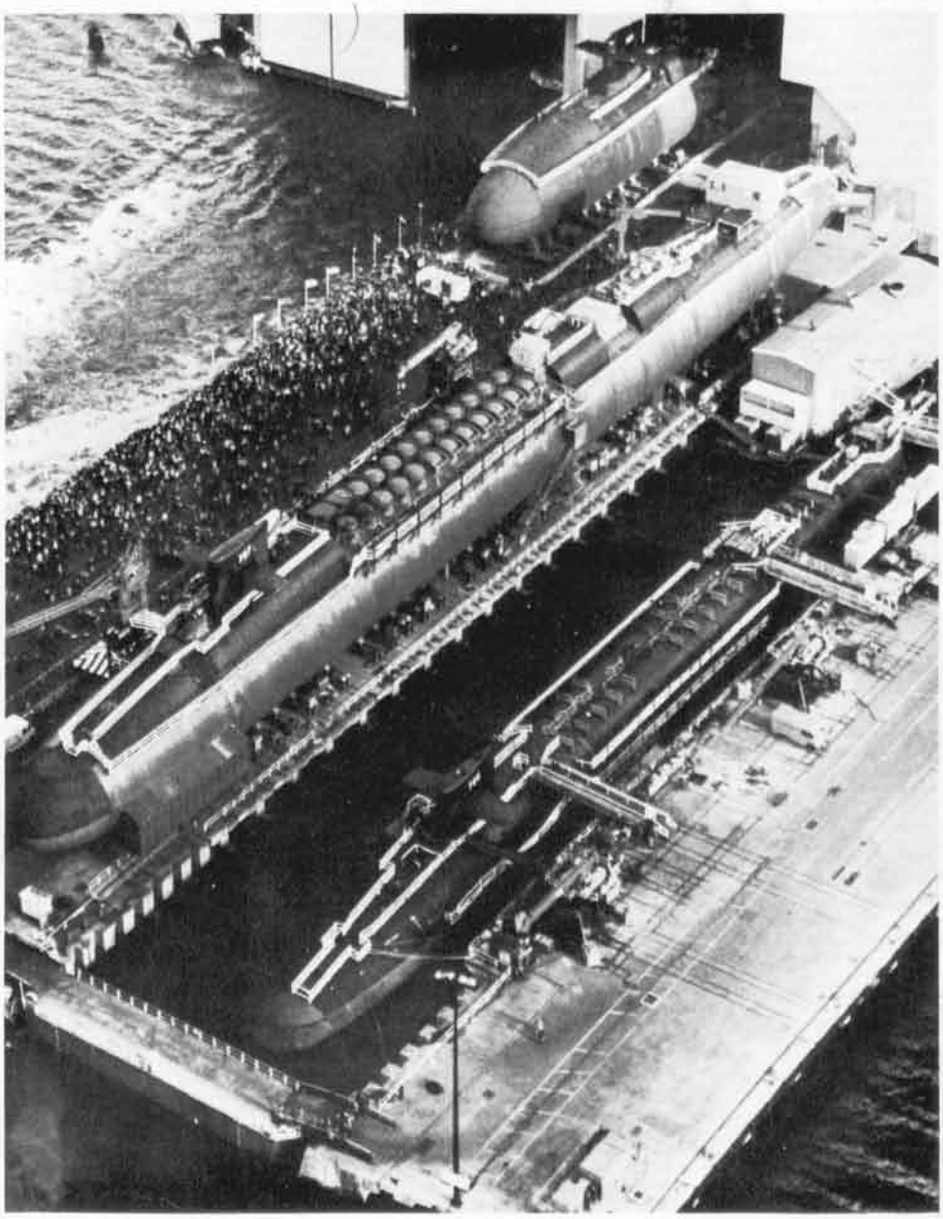
Designation: Initially the hull number SSBN 711 was planned for the first Trident submarine. However, on 21 February 1974 the designation SSBN 1 was assigned, confusing the Navy's submarine designation system which goes back to USS *Holland* (SS 1), commissioned in 1900. Subsequently, the designation was again changed on 10 April 1974, with the "block" SSBN 726-735 being reserved for the Trident programme. Six more 736-741 now added.

Diving depth: 985 feet *(300 m)*.

Electronics: UYK-7 computer is provided to support electronic and weapon systems. Mk 118 digital torpedo fire control system is installed. To be fitted with WSC-3 satellite communication transceiver.

Engineering: These submarines will have a nuclear core life of about nine years between refuellings. A prototype of the S8G reactor plant has been constructed at West Milton, New York. In December 1978 it was discovered that the turbines supplied by General Electric for *Ohio* were faulty. These had to be replaced at a cost of $3 million and a delay in *Ohio*'s commissioning date.

Fiscal: Costs of the first four SSBNs have increased over the initial appropriations. See 1975-76 edition for initial costs. SSBNs 731 and 732 in FY 1978 are funded at $1 703 million for the pair.
Originally requested under FY 1979 was $911·9 million for SSBN 733 construction and $274·8 million for advance procurement of SSBN 734. However, because of construction delays, design problems, settlement claims, etc, with previously authorised SSBNs, Congress refused to authorise the $911·9 million to build SSBN 733. Instead it approved $198 million for further advance procurement of SSBN 733 and the money for SSBN 734. The FY 1980 budget approved $1 121 million to construct SSBN 733 and $64 million for further advance procurement of SSBN 734. The FY 1981 budget approved a total spend of $1·5 billion for construction of SSBN 733 and $38 million additional for long-lead items for SSBN 734.



MICHIGAN (on pier), OHIO (in dock) and FLORIDA (at rear) *12/1979, General Dynamics*

Missiles: The Trident submarines will be armed initially with the Trident I missile, which became operational late in 1979. This missile has a range of 4 350 n. miles, a range already exceeded by the SS-N-8 missile in the Soviet "Delta" class submarines. However, the US missile will have a MIRV warhead, which at present is not fitted to SS-N-8, although SS-N-6 (Mod III) has an MRV head.
The Trident missile is expected to carry more than the 10 to 14 re-entry vehicles that the Poseidon can lift. In addition, the Mk 500 MARV (Manoeuvring Re-entry Vehicle) is under development for the purpose of demonstrating its compatability with the Trident I missile. This re-entry vehicle intended to evade ABM interceptor missiles and is not terminally guided to increase its accuracy.

Navigation: Each submarine will have two Mk 2 Ships Inertial Navigation Systems; to be fitted with satellite navigation receivers.

Operations: Availbility of each submarine is expected to be 65-70 per cent. Each will have two crews and will work on a schedule of 70 days patrol and 25 days alongside. Overhauls will be at nine year intervals.

Sonar: BQQ 5 (passive only).

31 "BENJAMIN FRANKLIN" and "LAFAYETTE" CLASSES (BALLISTIC MISSILE SUBMARINES (SSBN))

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
LAFAYETTE	SSBN 616	General Dynamics (Electric Boat Div)	17 Jan 1961	8 May 1962	23 Apr 1963	AA
ALEXANDER HAMILTON	SSBN 617	General Dynamics (Electric Boat Div)	26 June 1961	18 Aug 1962	27 June 1963	AA
ANDREW JACKSON	SSBN 619	Mare Island Naval Shipyard	26 Apr 1961	15 Sep 1962	3 July 1963	AA
JOHN ADAMS	SSBN 620	Portsmouth Naval Shipyard	19 May 1961	12 Jan 1963	12 May 1964	AA
JAMES MONROE	SSBN 622	Newport News Shipbuilding & D.D. Co	31 July 1961	4 Aug 1962	7 Dec 1963	AA
NATHAN HALE	SSBN 623	General Dynamics (Electric Boat Div)	2 Oct 1961	12 Jan 1963	23 Nov 1963	AA
WOODROW WILSON	SSBN 624	Mare Island Naval Shipyard	13 Sep 1961	22 Feb 1963	27 Dec 1963	AA
HENRY CLAY	SSBN 625	Newport News Shipbuilding & D.D. Co	23 Oct 1961	30 Nov 1962	20 Feb 1964	AA
DANIEL WEBSTER	SSBN 626	General Dynamics (Electric Boat Div)	28 Dec 1961	27 Apr 1963	9 Apr 1964	AA
JAMES MADISON	SSBN 627	Newport News Shipbuilding & D.D. Co	5 Mar 1962	15 Mar 1963	28 July 1964	AA
TECUMSEH	SSBN 628	General Dynamics (Electric Boat Div)	1 June 1962	22 June 1963	29 May 1964	AA
DANIEL BOONE	SSBN 629	Mare Island Naval Shipyard	6 Feb 1962	22 June 1963	23 Apr 1964	AA
JOHN C. CALHOUN	SSBN 630	Newport News Shipbuilding & D.D. Co	4 June 1962	22 June 1963	15 Sep 1964	AA
ULYSSES S. GRANT	SSBN 631	General Dynamics (Electric Boat Div)	18 Aug 1962	2 Nov 1963	17 July 1964	AA
VON STEUBEN	SSBN 632	Newport News Shipbuilding & D.D. Co	4 Sep 1962	18 Oct 1963	30 Sep 1964	AA
CASIMIR PULASKI	SSBN 633	General Dynamics (Electric Boat Div)	12 Jan 1963	1 Feb 1964	14 Aug 1964	AA
STONEWALL JACKSON	SSBN 634	Mare Island Naval Shipyard	4 July 1962	30 Nov 1963	26 Aug 1964	AA
SAM RAYBURN	SSBN 635	Newport News Shipbuilding & D.D. Co	3 Dec 1962	20 Dec 1963	2 Dec 1964	AA
NATHANAEL GREENE	SSBN 636	Portsmouth Naval Shipyard	21 May 1962	12 May 1964	19 Dec 1964	AA
BENJAMIN FRANKLIN	SSBN 640	General Dynamics (Electric Boat Div)	25 May 1963	5 Dec 1964	22 Oct 1965	AA
SIMON BOLIVAR	SSBN 641	Newport News Shipbuilding & D.D. Co	17 Apr 1963	22 Aug 1964	29 Oct 1965	AA
KAMEHAMEHA	SSBN 642	Mare Island Naval Shipyard	2 May 1963	16 Jan 1965	10 Dec 1965	AA
GEORGE BANCROFT	SSBN 643	General Dynamics (Electric Boat Div)	24 Aug 1963	20 Mar 1965	22 Jan 1966	AA
LEWIS AND CLARK	SSBN 644	Newport News Shipbuilding & D.D. Co	29 July 1963	21 Nov 1964	22 Dec 1965	AA
JAMES K. POLK	SSBN 645	General Dynamics (Electric Boat Div)	23 Nov 1963	22 May 1965	16 Apr 1966	AA
GEORGE C. MARSHALL	SSBN 654	Newport News Shipbuilding & D.D. Co	2 Mar 1964	21 May 1965	29 Apr 1966	AA
HENRY L. STIMSON	SSBN 655	General Dynamics (Electric Boat Div)	4 Apr 1964	13 Nov 1965	20 Aug 1966	AA
GEORGE WASHINGTON CARVER	SSBN 656	Newport News Shipbuilding & D.D. Co	24 Aug 1964	14 Aug 1965	15 June 1966	AA
FRANCIS SCOTT KEY	SSBN 657	General Dynamics (Electric Boat Div)	5 Dec 1964	23 Apr 1966	3 Dec 1966	AA
MARIANO G. VALLEJO	SSBN 658	Mare Island Naval Shipyard	7 July 1964	23 Oct 1965	16 Dec 1966	AA
WILL ROGERS	SSBN 659	General Dynamics (Electric Boat Div)	20 Mar 1965	21 July 1966	1 Apr 1967	AA

Displacement, tons: 6 650 light surfaced; 7 250 standard surfaced; 8 250 dived
Dimensions, feet (metres): 425 × 33 × 31·5 *(129·5 × 10·1 × 9·6)*
Missiles: 16 tubes for Poseidon C-3 SLBM (see *Missile* notes)
Torpedo tubes: 4—21 in *(533 mm)* Mk 65 (bow)
Main machinery: 1 pressurised-water cooled S5W (Westinghouse) reactor; 2 geared turbines; 15 000 shp; 1 shaft
Speed, knots: 20 surfaced; approx 30 dived
Complement: 168 (20 officers, 148 enlisted men) (SSBN 640 onward); 140 (14 officers, 126 enlisted men) (remainder)

These submarines were the largest undersea craft to be completed in the West in the 1960s. The first four submarines (SSBN 616, 617, 619, 620) were authorised in the FY 1961 shipbuilding programme with five additional submarines (SSBN 622-626) authorised in a supplemental to the FY 1961 programme; SSBN 627-636 (ten) in the FY 1962, SSBN 640-645 (six) in the FY 1963, and SSBN 654-659 (six) in the FY 1964. Cost for the earlier ships of this class was approximately $109·5 million per submarine.

Design: *Benjamin Franklin* and later submarines are officially considered a separate class; however, differences are minimal (eg, quieter machinery).

Electronics: Fitted with Mk 113 Mod 9 torpedo fire control system, and WSC-3 satellite communication transceiver.

Engineering: *Benjamin Franklin* and subsequent submarines of this class have been fitted with quieter machinery. All SSBNs have diesel-electric stand-by machinery, snorts, and "outboard" auxiliary propeller for emergency use.
The nuclear cores inserted in refuelling these submarines during the late 1960s and early 1970s cost approximately $3·5 million and provide energy for approximately 400 000 miles.

Missiles: Polaris; The first eight ships of this class were fitted with the Polaris A-2 missile (1 500 n. mile range) and the 23 later ships with the Polaris A-3 missile (2 500 n. mile range). SSBN 620 and SSBN 622-625 (five ships) were rearmed with the Polaris A-3 missile during overhaul-refuellings from 1968 to 1970. *Andrew Jackson* launched the first Polaris A-3 missile on 26 October 1963. *Daniel Webster* was the first submarine to deploy with the A-3 missile, beginning her first patrol on 28 September 1964. *Daniel Boone* was the first SSBN to deploy to the Pacific, beginning her first patrol with the A-3 missile on 25 December 1964.
Poseidon (C3); *James Madison* was the first submarine to undergo conversion to carry the Poseidon missile. She launched the first Poseidon missile on 3 August 1970 and began the first Poseidon patrol on 31 March 1971. Poseidon conversion, overhaul, and reactor refuelling are conducted simultaneously. In addition to changes in missile tubes to accommodate larger Poseidon, the conversion provides replacement of Mk 84 fire control system with Mk 88 system (see Posiedon Conversion Schedule following).

SIMON BOLIVAR *9/1976, Dr. Giorgio Arra*

WOODROW WILSON *7/1977, USN (Lieut Frank Peele)*

Trident I (C4); Current planning provides for 12 units of these two classes to be fitted with the Trident I missile. *Francis Scott Key* is the first SSBN to be converted to fire the Trident I missile. Six of the conversions, namely those of SSBN 627, 632, 633, 640/641 and 643 will take place during the regularly scheduled overhauls of the submarines (hence the longer conversion periods) and the remainder during tender availabilities alongside an AS (FBM) (hence the shorter conversion periods). The actual industrial time spent on the conversion package is about one month. The conversion includes minor modifications to the launcher and to the ballasting of the submarine to accommodate the greater weight of the Trident missile as well as extensive modifications to the installed fire control, instrumentation and missile checkout subsystems to support the increased sophistication of the longer range missile. A tentative conversion schedule is indicated on the following page. *Francis Scott Key* received her Trident conversion during her tender availability and served as a sea-going test bed for the sea testing phase of the Trident I missile. *Francis Scott Key* completed her trials role and returned to her deterrent mission on 20 October 1979 as the first SSBN to deploy with the Trident I missile. All Trident equipped SSBNs of this class are based at Kings Bay, Georgia.

A tentative plan (spring 1981) is to retrofit another 12 Poseidon boats of the "Lafayette"/"Benjamin Franklin" classes to launch Trident I giving a total of 24. Total cost of these conversions would be $2·1 billion (through FY 1983).

Navigation: These submarines are equipped with an elaborate Ship's Inertial Navigation System (SINS), a system of gyroscopes and accelerometers which relates movement of the ship in all directions, true speed through the water and over the ocean floor, and true north to give a continuous report of the submarine's position. Navigation data produced by SINS can be provided to each missile's guidance package until the instant the missile is fired.
As converted, all Poseidon submarines have three Mk 2 Mod 4 SINS; all fitted with navigational satellite receivers.

Operations: Each submarine is assigned two alternating crews designated "Blue" and "Gold". Each crew mans the submarine during a 70 day patrol and partially assists during the intermediate 32 day refit alongside a tender. Every six years each submarine undergoes a 16 month refit.

TRIDENT CONVERSION SCHEDULE

SSBN No.	FY Programme	Location	Start	Complete
627	1979	Newport News S.B. & D.D. Co	3 Aug 1979	12 June 1981
629	1980*	Norfolk Naval Shipyard	3 Apr 1980	30 May 1980
630	1980*	Norfolk Naval Shipyard	30 June 1980	26 Aug 1980
632	1980	Newport News S.B. & D.D. Co	13 Jan 1980	12 Aug 1981
633	1980	Newport News S.B. & D.D. Co	1 July 1980	15 Jan 1982
634	1981*	Norfolk Naval Shipyard	15 Sep 1981	13 Nov 1981
640	1980	Portsmouth Naval Shipyard	12 Nov 1979	12 June 1981
641	1979	Portsmouth Naval Shipyard	2 Mar 1979	28 Dec 1980
643	1980	Portsmouth Naval Shipyard	1 June 1980	1 Nov 1981
655	1980*	Norfolk Naval Shipyard	4 Dec 1979	7 Feb 1980
657	1979*	Norfolk Naval Shipyard	24 Sep 1978	4 Dec 1978
658	1979*	Norfolk Naval Shipyard	3 Sep 1979	5 Nov 1980

* Accomplished by shipyard alongside pier at Cape Canaveral, Florida.

SUBMARINES (SSN and SS)

The US Navy's submarine forces consist of two principal categories: ballistic missile submarines (SSBN), listed in the previous section, and attack submarines (SS and SSN).
The Navy's attack submarine force is almost entirely nuclear. The few remaining diesel-electric submarines are all of post-World War II construction. The stated goal of the US Navy is to attain a force level of 90 SSNs ("Skipjack" class and later) by the mid-1980s, but because of construction problems there will be delays in this programme.
Construction of the submarines recently has been slowed by the late delivery of component equipment and problems in the shipyards. Further complicating the situation has been the start of the Trident missile submarine programme and the loss to the SSN construction programme of the Litton/Ingalls yard at Pascagoula, Mississippi, which delivered its last nuclear submarine in 1974. This leaves only two shipyards in the USA building nuclear submarines. (No diesel-propelled submarines have been built in the USA since 1959).
In January 1977 Secretary of Defense D. H. Rumsfeld reported "It has been decided to continue the production of the "Los Angeles" class until at least the mid-1980s rather than to introduce a new generation submarine. We plan to procure eight SSN 688s in the five year programme. A faster building rate will be necessary in the 1980s." In March 1978 Secretary of Defense Harold Brown reduced the procurement rate from eight to five.
Plans to cease construction of the "Los Angeles" class in favour of the FA-SSN (see below) have been criticised by Congress and others. The design of the FA-SSN ("Fat Albert") is considered in certain circles to be unworkable. It is reported that the new Administration will continue "Los Angeles" construction at an increased rate starting with FY 1982.

Ancillary programmes: These include development of a wide-aperture array sonar for rapid localisation of targets and attack, the retrofitting of BQQ 5 sonar in all submarines of the "Sturgeon" class and deployment of submarine-launched Harpoon.

Anti-ship missiles: An encapsulated version of the Harpoon anti-ship missile can be launched from many submarines. This version (length 21 ft), is launched from a torpedo tube and travels to the surface where the protective capsule is discarded, the missile's fins extend, and the rocket engine ignites. The Harpoon has a range of about 60 n. miles and was operational in FY 1978/9.

Deep submergence vehicles: The US Navy's Deep Submergence Vehicles (DSV), including the nuclear-propelled *NR-1*, are rated as Service Craft and are listed at the end of the "Special Vessels" section following the MSC section.

Force levels: As of 1 March 1981 there were 82 SS/SSNs in commission. In addition 24 SSNs were under construction and 3 SSNs and 1 SS in reserve.

FAST ATTACK SUBMARINES (nuclear-powered) (FA-SSN): Proposed

This class at one time represented the successor to the "Los Angeles" class. It has become apparent that there was a need to develop a lower cost SSN if the US Navy was to be able to maintain the submarine fleet size that was desirable. Recent studies had suggested that for many submarine missions, a smaller and less expensive submarine could perform just as well as the "SSN 688" class. Although overall not as capable as the "Los Angeles", this new class would be equally effective in those tasks where submarines have been clearly shown to be superior to other platforms.
The future of this design is at present uncertain under the new Administration but, if it is deleted, studies for a cheaper SSN may well continue.

13 + 20 + (7) "LOS ANGELES" CLASS: SUBMARINES (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
LOS ANGELES	SSN 688	Newport News S.B. & D.D. Co	8 Jan 1972	6 Apr 1974	13 Nov 1976	PA
BATON ROUGE	SSN 689	Newport News S.B. & D.D. Co	18 Nov 1972	26 Apr 1975	25 June 1977	AA
PHILADELPHIA	SSN 690	General Dynamics (Electric Boat Div)	12 Aug 1972	19 Oct 1974	25 June 1977	AA
MEMPHIS	SSN 691	Newport News S.B. & D.D. Co	23 June 1973	3 Apr 1976	17 Dec 1977	AA
OMAHA	SSN 692	General Dynamics (Electric Boat Div)	27 Jan 1973	21 Feb 1976	11 Mar 1978	PA
CINCINNATI	SSN 693	Newport News S.B. & D.D. Co	6 Apr 1974	19 Feb 1977	10 June 1978	AA
GROTON	SSN 694	General Dynamics (Electric Boat Div)	3 Aug 1973	9 Oct 1976	8 July 1978	AA
BIRMINGHAM	SSN 695	Newport News S.B. & D.D. Co	26 Apr 1975	29 Oct 1977	16 Dec 1978	AA
NEW YORK CITY	SSN 696	General Dynamics (Electric Boat Div)	15 Dec 1973	18 June 1977	3 Mar 1979	AA
INDIANAPOLIS	SSN 697	General Dynamics (Electric Boat Div)	19 Oct 1974	30 July 1977	5 Jan 1980	PA
BREMERTON	SSN 698	General Dynamics (Electric Boat Div)	8 May 1976	22 July 1978	28 Mar 1981	PA
JACKSONVILLE	SSN 699	General Dynamics (Electric Boat Div)	21 Feb 1976	18 Nov 1978	Apr 1981	Bldg
DALLAS	SSN 700	General Dynamics (Electric Boat Div)	9 Oct 1976	28 Apr 1979	May 1981	Bldg
LA JOLLA	SSN 701	General Dynamics (Electric Boat Div)	16 Oct 1976	11 Aug 1979	Sep 1981	Bldg
PHOENIX	SSN 702	General Dynamics (Electric Boat Div)	30 July 1977	8 Dec 1979	1981	Bldg
BOSTON	SSN 703	General Dynamics (Electric Boat Div)	11 Aug 1978	19 Apr 1980	1981	Bldg
BALTIMORE	SSN 704	General Dynamics (Electric Boat Div)	21 May 1979	13 Dec 1980	1982	Bldg
CORPUS CHRISTI	SSN 705	General Dynamics (Electric Boat Div)	4 Sep 1979	Mar 1981	1982	Bldg
—	SSN 706	General Dynamics (Electric Boat Div)	8 Dec 1979	July 1981	1982	Bldg
—	SSN 707	General Dynamics (Electric Boat Div)	8 May 1980	1981	1983	Bldg
—	SSN 708	General Dynamics (Electric Boat Div)	8 Nov 1980	1982	1983	Bldg
—	SSN 709	General Dynamics (Electric Boat Div)	Mar 1981	1982	1984	Bldg
—	SSN 710	General Dynamics (Electric Boat Div)	July 1981	1983	1984	Bldg
SAN FRANCISCO	SSN 711	Newport News S.B. and D.D. Co	26 May 1977	27 Oct 1979	24 Apr 1981	—
ATLANTA	SSN 712	Newport News S.B. and D.D. Co	17 Aug 1978	16 Aug 1980	1981	Bldg
HOUSTON	SSN 713	Newport News S.B. and D.D. Co	29 Jan 1979	21 Mar 1981	1982	Bldg
—	SSN 714	Newport News S.B. and D.D. Co	1 Aug 1979	1981	1982	Bldg
—	SSN 715	Newport News S.B. and D.D. Co	25 Jan 1980	1981	1983	Bldg
—	SSN 716	Newport News S.B. and D.D. Co	26 Aug 1980	1982	1983	Bldg
—	SSN 717	Newport News S.B. and D.D. Co	Mar 1981	1982	1984	Bldg
—	SSN 718	Newport News S.B. and D.D. Co	1981	1983	1984	Ord
—	SSN 719	General Dynamics (Electric Boat Div)	1981	1983	1984	Ord
—	SSN 720	General Dynamics (Electric Boat Div)	1982	1983	1985	Ord
—	SSN 721	Approved FY 1980 programme				
—	SSN 722	Approved FY 1980 programme				
—	SSN 723	Approved FY 1981 programme				
—	SSN 724	Approved FY 1981 programme				
—	SSN 725	Proposed FY 1982 programme				
—	SSN 742	Proposed FY 1983 programme				
—	SSN 743	Proposed FY 1984 programme				
—	SSN 744	Proposed FY 1985 programme				
—	SSN 745	Proposed FY 1986 programme				
—	SSN 746	Proposed FY 1986 programme				

Displacement, tons: 6 000 standard; 6 900 dived
Dimensions, feet (metres): 360 × 33 × 32·3 *(109·7 × 10·1 × 9·9)*
Missiles: Tube launched Harpoon; Tomahawk to be fitted
Torpedo tubes: 4—21 in *(533 mm)* amidships
A/S weapons: SUBROC and Mk 48 A/S torpedoes
Main machinery: 1 pressurised-water cooled S6G (GE) reactor; 2 geared turbines; 1 shaft; approx 35 000 shp
Speed, knots: 30+ dived
Complement: 127 (12 officers, 115 enlisted men)

SSN 688-690 were authorised in the FY 1970 new construction programme, SSN 691-694 in the FY 1971, SSN 695-699 in the FY 1972, SSN 700-705 in the FY 1973, SSN 706-710 in the FY 1974, SSN 711-713 in the FY 1975, SSN 714-715 in the FY 1976, SSN 716-718 in the FY 1977, SSN 719 in the FY 1978, SSN 720 in the FY 1979, SSN 721-722 in the FY 1980, and SSN 723-724 in the FY 1981 programmes.
Detailed design of the "SSN 688" class as well as construction of the lead submarine was contracted to the Newport News Shipbuilding & Dry Dock Company, Newport News, Virginia.

Due to controversy in Washington, strikes and other shipyard problems these submarines are considerably behind schedule with the lead ship being completed over two years behind the original date. Thus, *Los Angeles* was nearly five years from keel laying to commissioning while *Birmingham* took only three and a half years. Further delays have resulted from welding faults (see *Engineering* note).

Design: Every effort has been made to improve sound quieting and the trials of *Los Angeles* have shown success in this area.

Diving depth: 1 475 feet *(450 m)*.

Electronics: UYK-7 computer is installed to assist command and control functions: Mk 113 Mod 10 torpedo fire control system fitted in SSN 688-699 (to be replaced by Mk 117 in near future); Mk 117 in later submarines.
Fitted with WSC-3 satellite communications transceiver.

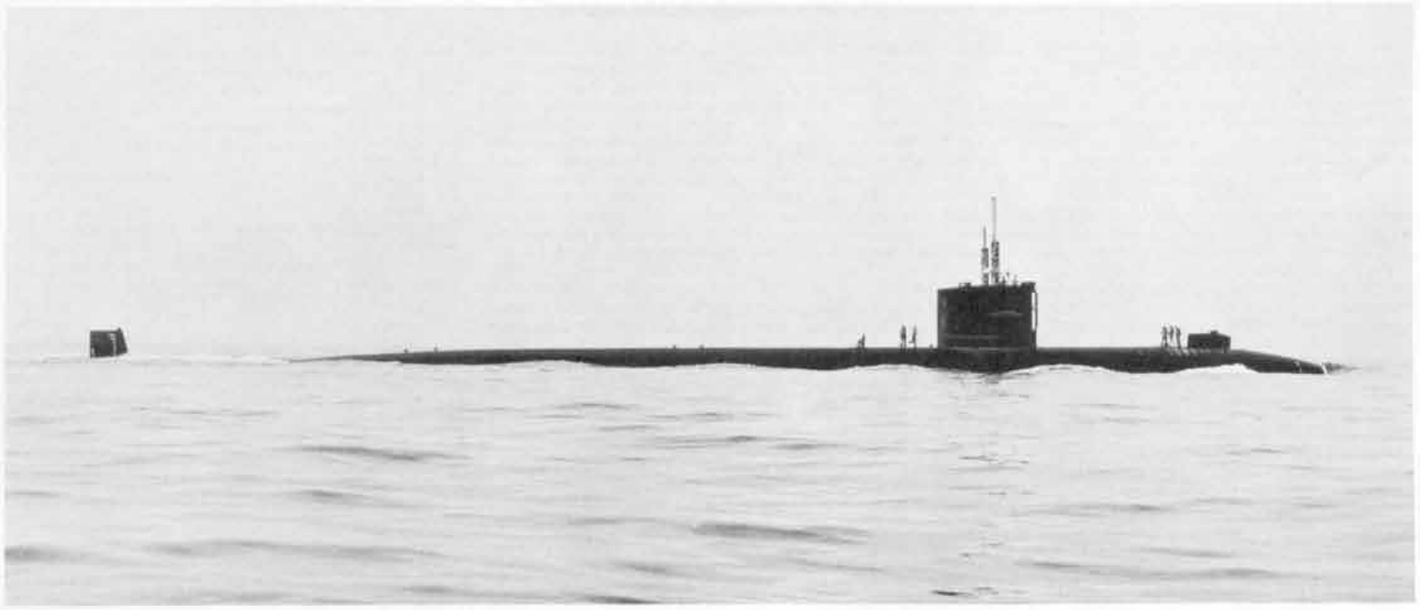
Engineering: The S6G reactor is reportedly a modified version of the D2G type fitted in *Bainbridge* and *Truxtun*. The D2G reactors each produce approximately 35 000 shp. Reactor core life between refuellings is estimated at ten years.

Since December 1978 defects have been found in General Electric Co's turbines installed in 16 submarines of this class (SSN 697 onwards). Repairs in submarines already completed or nearing completion necessitate the opening of the pressure hull and will cost $3 million each. In addition those submarines with General Electric turbines (SSN 690, 692, 694, 696) which are not included above are to be speed limited until their turbines are inspected.

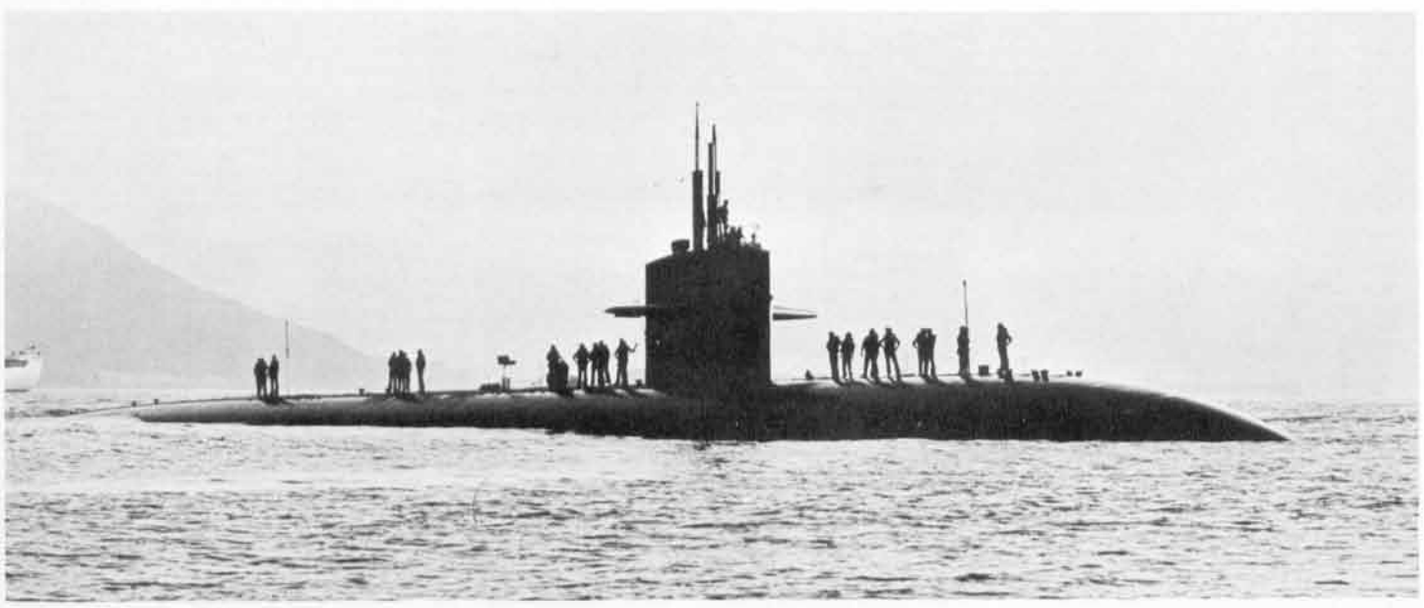
Fiscal: The costs of these submarines have increased in every fiscal year programme. In FY 1976 an average cost of $221·25 million per boat was estimated for a 38-submarine class. However, FY 1977 boats were estimated to cost approximately $330 million each, the single FY 1979 boat is estimated at $325·6 million, the two in FY 1980, $809·6 million and the two in FY 1981 $991·7 million.

Radar: BPS 15.

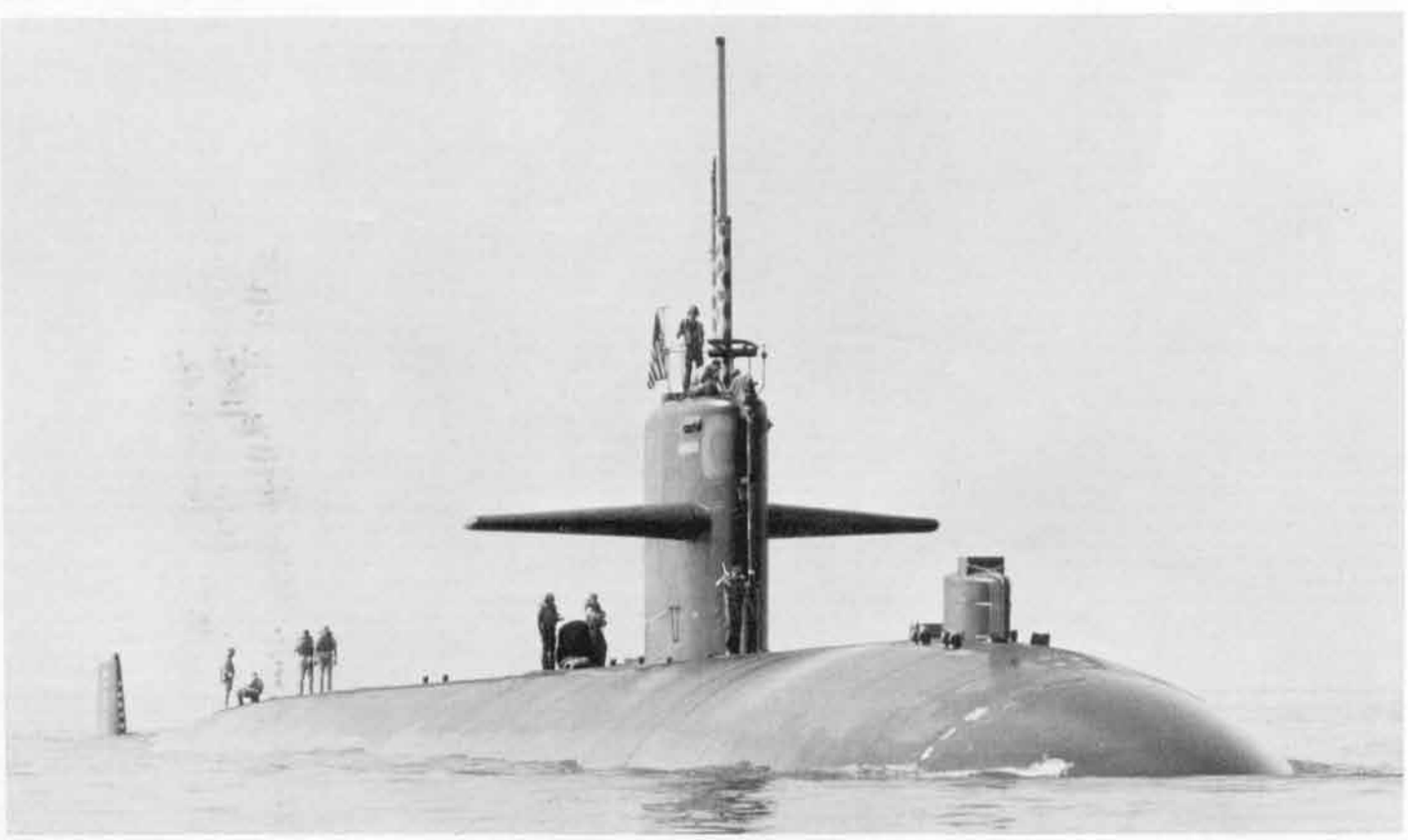
Sonar: BQQ 5 long range acquisition; BQS 15 close range; Towed array fitted. The BQQ 5 has given excellent results. On one occasion two Soviet "Victor" class were tracked simultaneously.



INDIANAPOLIS *1980, Dr. Giorgio Arra*



LOS ANGELES *6/1979, Dr. Giorgio Arra*



INDIANAPOLIS *1980, Dr. Giorgio Arra*

1 "GLENARD P. LIPSCOMB" CLASS: SUBMARINE (nuclear-powered) (SSN)

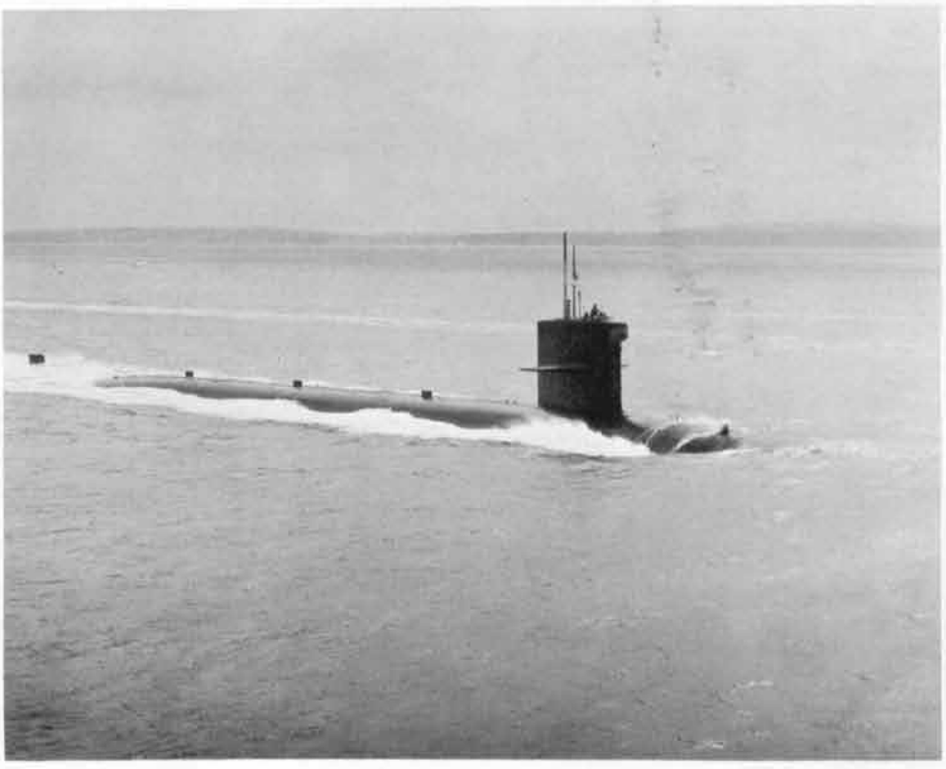
Name	No.	Builders	Laid down	Launched	Commissioned	FIS
GLENARD P. LIPSCOMB	SSN 685	General Dynamics (Electric Boat Div)	5 June 1971	4 Aug 1973	21 Dec 1974	AA

Displacement, tons: 5 813 standard; 6 480 dived
Dimensions, feet (metres): 365 × 31·7 × 31 *(111·3 × 9·7 × 9·5)*
Missiles: To be fitted for Harpoon
Torpedo tubes: 4—21 in *(533 mm)* amidships
A/S weapons: SUBROC and A/S torpedoes
Main machinery: 1 pressurised-water cooled S5Wa (Westinghouse) reactor; Turbine-electric drive (General Electric); 1 shaft
Speed, knots: approx 25+ dived
Complement: 120 (12 officers, 108 enlisted men)

Studies of a specifically "quiet" submarine were begun in October 1964. After certain setbacks approval for the construction of this submarine was announced on 25 October 1968 and the contract awarded to General Dynamics on 14 October 1970. The Turbine-Electric Drive Submarine (TEDS) was constructed to test "a combination of advanced silencing techniques" involving "a new kind of propulsion system, and new and quieter machinery of various kinds", according to the Department of Defense. The TEDS project will permit an at-sea evaluation of improvements in ASW effectiveness due to noise reduction.
No further class of turbine-electric nuclear submarines has been proposed. Rather, quieting features developed in *Glenard P. Lipscomb* which do not detract from speed have been incorporated in the "Los Angeles" design.
Authorised in the FY 1968 new construction programme, estimated construction cost was approximately $200 million.

Electronics: Mk 113 Mod 8 TFCS. To be replaced by Mk 117 Mod 3.
Fitted with WSC-3 satellite communications transceiver.

Engineering: Turbine-electric drive eliminates the noisy reduction gears of standard steam turbine power plants. The turbine-electric power plant is larger and heavier than comparable geared steam turbine submarine machinery.
Tullibee (SSN 597) was an earlier effort at noise reduction through a turbine-electric nuclear plant.



GLENARD P. LIPSCOMB *5/1980, Wright and Logan*

1 "NARWHAL" CLASS: SUBMARINE (nuclear-powered) (SSN)

Name	No.	Builders	Laid down	Launched	Commissioned	FIS
NARWHAL	SSN 671	General Dynamics (Electric Boat Div)	17 Jan 1966	9 Sep 1967	12 July 1969	AA

Displacement, tons: 4 450 standard; 5 350 dived
Dimensions, feet (metres): 314·6 × 37·7 × 27 *(95·9 × 11·5 × 8·2)*
Missiles: To be fitted for Harpoon
Torpedo tubes: 4—21 in *(533 mm)* amidships
A/S weapons: SUBROC and A/S torpedoes
Main machinery: 1 pressurised water-cooled S5G (General Electric) reactor; 2 steam turbines; 17 000 shp; 1 shaft
Speed, knots: 20+ surfaced; 30+ dived
Complement: 107 (12 officers, 95 enlisted men)

Authorised in the FY 1964 new construction programme.

Design: *Narwhal* is similar to the "Sturgeon" class submarines in hull design.

Electronics: Mk 113 Mod 6 torpedo fire control system. To be replaced by Mk 117 system.
Fitted with WSC-3 satellite communications transceiver.

Engineering: *Narwhal* is fitted with the prototype sea-going S5G natural circulation reactor plant. According to Admiral H. G. Rickover the natural circulation reactor "offers promise of increased reactor plant reliability, simplicity, and noise reduction due to the elimination of the need for large reactor coolant pumps and associated electrical and control equipment by taking maximum advantage of natural convection to circulate the reactor coolant".
The Atomic Energy Commission's Knolls Atomic Power Laboratory was given prime responsibility for development of the power plant. Construction of a land-based prototype plant began in May 1961 at the National Reactor Testing Station in Idaho. The reactor achieved initial criticality on 12 September 1965.

Sonar: BQS 8 upward-looking sonar for under-ice work (photo). BQQ 2 system (BQS 6 active and BQR 7 passive). BQS 6 is fitted in a 15 ft sphere and BQR 7 with conformal hydrophone array forward.

NARWHAL *2/1974, USN*

37 "STURGEON" CLASS: SUBMARINES (nuclear-powered) (SSN)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
STURGEON	SSN 637	General Dynamics (Electric Boat Div)	10 Aug 1963	26 Feb 1966	3 Mar 1967	AA
WHALE	SSN 638	General Dynamics (Quincy)	27 May 1964	14 Oct 1966	12 Oct 1968	AA
TAUTOG	SSN 639	Ingalls Shipbuilding Corp	27 Jan 1964	15 Apr 1967	17 Aug 1968	PA
GRAYLING	SSN 646	Portsmouth Naval Shipyard	12 May 1964	22 June 1967	11 Oct 1969	AA
POGY	SSN 647	Ingalls Shipbuilding Corp	4 May 1964	3 June 1967	15 May 1971	PA
ASPRO	SSN 648	Ingalls Shipbuilding Corp	23 Nov 1964	29 Nov 1967	20 Feb 1969	PA
SUNFISH	SSN 649	General Dynamics (Quincy)	15 Jan 1965	14 Oct 1966	15 Mar 1969	AA
PARGO	SSN 650	General Dynamics (Electric Boat Div)	3 June 1964	17 Sep 1966	5 Jan 1968	AA
QUEENFISH	SSN 651	Newport News S.B. & D.D. Co	11 May 1964	25 Feb 1966	6 Dec 1966	PA
PUFFER	SSN 652	Ingalls Shipbuilding Corp	8 Feb 1965	30 Mar 1968	9 Aug 1969	PA
RAY	SSN 653	Newport News S.B. & D.D. Co	1 Apr 1965	21 June 1966	12 Apr 1967	AA
SAND LANCE	SSN 660	Portsmouth Naval Shipyard	15 Jan 1965	11 Nov 1969	25 Sep 1971	AA
LAPON	SSN 661	Newport News S.B. & D.D. Co	26 July 1965	16 Dec 1966	14 Dec 1967	AA
GURNARD	SSN 662	San Francisco NSY (Mare Island)	22 Dec 1964	20 May 1967	6 Dec 1968	PA
HAMMERHEAD	SSN 663	Newport News S.B. & D.D. Co	29 Nov 1965	14 Apr 1967	28 June 1968	AA
SEA DEVIL	SSN 664	Newport News S.B. & D.D. Co	12 Apr 1966	5 Oct 1967	30 Jan 1969	AA
GUITARRO	SSN 665	San Francisco NSY (Mare Island)	9 Dec 1965	27 July 1968	9 Sep 1972	PA
HAWKBILL	SSN 666	San Francisco NSY (Mare Island)	12 Sep 1966	12 Apr 1969	4 Feb 1971	PA
BERGALL	SSN 667	General Dynamics (Electric Boat Div)	16 Apr 1966	17 Feb 1968	13 June 1969	AA
SPADEFISH	SSN 668	Newport News S.B. & D.D. Co	21 Dec 1966	15 May 1968	14 Aug 1969	AA
SEAHORSE	SSN 669	General Dynamics (Electric Boat Div)	13 Aug 1966	15 June 1968	19 Sep 1969	AA
FINBACK	SSN 670	Newport News S.B. & D.D. Co	26 June 1967	7 Dec 1968	4 Feb 1970	AA
PINTADO	SSN 672	San Francisco NSY (Mare Island)	27 Oct 1967	16 Aug 1969	11 Sep 1971	PA
FLYING FISH	SSN 673	General Dynamics (Electric Boat Div)	30 June 1967	17 May 1969	29 Apr 1970	AA
TREPANG	SSN 674	General Dynamics (Electric Boat Div)	28 Oct 1967	27 Sep 1969	14 Aug 1970	AA
BLUEFISH	SSN 675	General Dynamics (Electric Boat Div)	13 Mar 1968	10 Jan 1970	8 Jan 1971	AA
BILLFISH	SSN 676	General Dynamics (Electric Boat Div)	20 Sep 1968	1 May 1970	12 Mar 1971	AA
DRUM	SSN 677	San Francisco NSY (Mare Island)	20 Aug 1968	23 May 1970	15 Apr 1972	PA
ARCHERFISH	SSN 678	General Dynamics (Electric Boat Div)	19 June 1969	16 Jan 1971	17 Dec 1971	AA
SILVERSIDES	SSN 679	General Dynamics (Electric Boat Div)	13 Oct 1969	4 June 1971	5 May 1972	AA
WILLIAM H. BATES (ex-*Redfish*)	SSN 680	Ingalls Shipbuilding (Litton)	4 Aug 1969	11 Dec 1971	5 May 1973	PA
BATFISH	SSN 681	General Dynamics (Electric Boat Div)	9 Feb 1970	9 Oct 1971	1 Sep 1972	AA
TUNNY	SSN 682	Ingalls Shipbuilding (Litton)	22 May 1970	10 June 1972	26 Jan 1974	PA
PARCHE	SSN 683	Ingalls Shipbuilding (Litton)	10 Dec 1970	13 Jan 1973	17 Aug 1974	PA
CAVALLA	SSN 684	General Dynamics (Electric Boat Div)	4 June 1970	19 Feb 1972	9 Feb 1973	PA
L. MENDEL RIVERS	SSN 686	Newport News S.B. & D.D. Co	26 June 1971	2 June 1973	1 Feb 1975	AA
RICHARD B. RUSSELL	SSN 687	Newport News S.B. & D.D. Co	19 Oct 1971	12 Jan 1974	16 Aug 1975	AA

Displacement, tons: 3 640 standard; 4 640 dived
Dimensions, feet (metres): 292·2 × 31·7 × 26 *(89 × 9·5 × 7·9) (see Design* notes)
Missiles: Being fitted for Harpoon (already in about half the class)
Torpedo tubes: 4—21 in *(533 mm)* Mk 63 amidships
A/S weapons: SUBROC and A/S torpedoes
Main machinery: 1 pressurised-water cooled S5W (Westinghouse) reactor; 2 steam turbines; 15 000 shp; 1 shaft
Speed, knots: 20+ surfaced; 30+ dived
Complement: 107 (12 officers, 95 enlisted men)

The 37 "Sturgeon" class attack submarines were the largest US Navy group of nuclear-powered ships built to the same design until the advent of the "Los Angeles" class.
SSN 637-639 were authorised in the FY 1962 new construction programme. SSN 646-653 in FY 1963, SSN 660-664 in FY 1964, SSN 665-670 in FY 1965, SSN 672-677 in FY 1966, SSN 678-682 in FY 1967, SSN 683-684 in FY 1968, and SSN 686-687 in FY 1969.

Construction: *Pogy* was begun by the New York Shipbuilding Corp (Camden, New Jersey), contract with whom was terminated on 5 June 1967; contract for completion awarded to Ingalls Shipbuilding Corp on 7 December 1967.
Guitarro sank in 35 ft of water on 15 May 1969 while being fitted out at the San Francisco Bay Naval Shipyard. According to a congressional report, the sinking, caused by shipyard workers, was "wholly avoidable". Subsequently raised; damage estimated at $25 million. Completion delayed more than two years.

Design: These submarines are slightly larger than the previous "Thresher" class and can be identified by their taller sail structure and the lower position of their diving planes on the sail (to improve control at periscope depth). Sail height is 20 ft, 6-in above deck. Sail-mounted diving planes rotate to vertical for breaking through ice when surfacing in arctic regions.
These submarines probably are slightly slower than the previous "Thresher" and "Skipjack" classes because of their increased size with the same propulsion system as in the earlier classes.
SSN 678/684, 686 and 687 are ten feet longer than remainder of class to accommodate extra sonar and electronic gear.

Diving depth: 1 320 feet *(400 m)*.

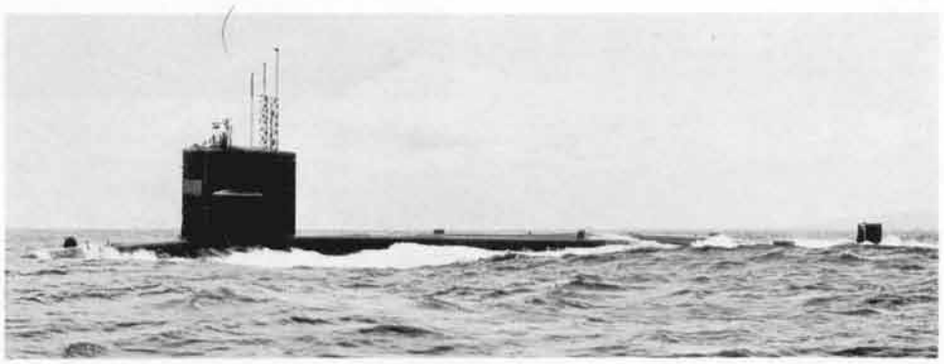
Electronics: Mk 113 torpedo fire control system is being replaced by Mk 117 (already in SSN 638, 639, 646-9, 652, 662-3, 665, 668-9, 673).
Fitted with WSC-3 satellite communications transceiver.

Name: *William H. Bates* (SSN 680) previously *Redfish* renamed 25 June 1971.

Operational: *Whale, Pargo,* and older nuclear submarine *Sargo* conducted exercises in the Arctic ice pack during March-April 1969. *Whale* surfaced at the geographic North Pole on 6 April, the 60th anniversary of Rear-Admiral Robert E. Peary's reaching the North Pole. This was the first instance of single-screw US nuclear submarines surfacing in the Arctic ice.

Radar: BPS 14 Search.

Sonar: BQQ 2 sonar system. Principal components of the BQQ 2 include the BQS 6 active sonar, with transducers mounted in a 15 ft diameter sonar sphere, and BQR 7 passive sonar, with hydrophones in a conformal array on sides of forward hull. The active sonar sphere is fitted in the optimum bow position, requiring placement of torpedo tubes amidships. These submarines also have BQS 8 under-ice sonar and BQS 12 (first 16 boats) or BQS 13 active/passive sonars. Transducers for the BQS 8, intended primarily for under-ice navigation, are in two small domes aft of the sail structure.



DRUM — *3/1980, Dr. Giorgio Arra*

PINTADO — *1980, Dr. Giorgio Arra*

SEAHORSE — *5/1980, Wright and Logan*

Sonar suites of the *Guitarro* and *Cavalla* have been modified. All "Sturgeon" class submarines are to be refitted with replacement of the BQQ 2 by BQQ 5 during regular overhauls.

Submersibles: *Hawkbill* and *Pintado* have been modified to carry and support the Navy's Deep Submergence Rescue Vehicles (DSRV). See section on Deep Submergence Vehicles for additional DSRV details.

Weapons: Standard load is four Subroc, four Harpoon and 15 Mk 48 torpedoes.

13 "THRESHER" CLASS: SUBMARINES (nuclear-powered) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
PERMIT	SSN 594	Mare Island Naval Shipyard	16 July 1959	1 July 1961	29 May 1962	PA
PLUNGER	SSN 595	Mare Island Naval Shipyard	2 Mar 1960	9 Dec 1961	21 Nov 1962	PA
BARB	SSN 596	Ingalls Shipbuilding Corp	9 Nov 1959	12 Feb 1962	24 Aug 1963	PA
POLLACK	SSN 603	New York Shipbuilding Corp	14 Mar 1960	17 Mar 1962	26 May 1964	PA
HADDO	SSN 604	New York Shipbuilding Corp	9 Sep 1960	18 Aug 1962	16 Dec 1964	PA
JACK	SSN 605	Portsmouth Naval Shipyard	16 Sep 1960	24 Apr 1963	31 Mar 1967	PA
TINOSA	SSN 606	Portsmouth Naval Shipyard	24 Nov 1959	9 Dec 1961	17 Oct 1964	AA
DACE	SSN 607	Ingalls Shipbuilding Corp	6 June 1960	18 Aug 1962	4 Apr 1964	PA
GUARDFISH	SSN 612	New York Shipbuilding Corp	28 Feb 1961	15 May 1965	20 Dec 1966	AA
FLASHER	SSN 613	General Dynamics (Electric Boat Div)	14 Apr 1961	22 June 1963	22 July 1966	PA
GREENLING	SSN 614	General Dynamics (Electric Boat Div)	15 Aug 1961	4 Apr 1964	3 Nov 1967	PA
GATO	SSN 615	General Dynamics (Electric Boat Div)	15 Dec 1961	14 May 1964	25 Jan 1968	AA
HADDOCK	SSN 621	Ingalls Shipbuilding Corp	24 Apr 1961	21 May 1966	22 Dec 1967	PA

Displacement, tons: 3 750 standard; *Flasher, Greenling* and *Gato* 3 800; 4 300 dived except *Jack* 4 470 dived, *Flasher, Greenling* and *Gato* 4 242 dived
Length, feet (metres): 278·5 *(84·9)* oa except *Jack* 297·4 *(90·7)* oa, *Flasher, Greenling* and *Gato* 292·2 *(89·1)*
Beam, feet (metres): 31·7 *(9·6)*
Draught, feet (metres): 28·4 *(8·7)*
Missiles: Being fitted for Harpoon
Torpedo tubes: 4—21 in *(533 mm)* Mk 63 amidships
A/S weapons: SUBROC and A/S torpedoes
Main machinery: 1 pressurised-water cooled S5W (Westinghouse) reactor; 2 steam turbines, 15 000 shp; 1 shaft
Speed, knots: 20+ surfaced; 30+ dived
Complement: 103 (12 officers, 91 enlisted men)

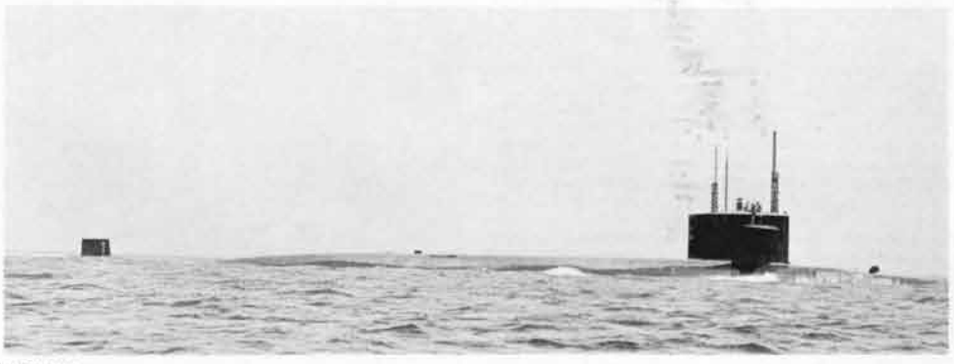
They have a greater depth capability than previous SSNs and are the first to combine the SUBROC anti-submarine missile capability with the advanced BQQ 2 sonar system. The lead ship of the class, *Thresher* (SSN 593), was authorised in the FY 1957 new construction programme, the SSN 594-596 in FY 1958, SSN 603-607 in FY 1959, SSN 612-615 in FY 1960, and SSN 621 in FY 1961.
Thresher (SSN 593) was lost off the coast of New England on 10 April 1963 while on post-overhaul trials. She went down with 129 men on board (108 crewmen plus four naval officers and 17 civilians on board for trials).

Construction: *Greenling* and *Gato* were launched by the Electric Boat Division of the General Dynamics Corp (Groton, Connecticut); towed to Quincy Division (Massachusetts) for lengthening and completion.

Design: *Jack* was built to a modified design to test a modified power plant (see *Engineering* notes).
Flasher, Gato and *Greenling* were modified during construction; fitted with SUBSAFE features, heavier machinery, and larger sail structures.
These submarines have a modified "tear-drop" hull design. Their bows are devoted to sonar and their four torpedo tubes are amidships, angled out, two to port and two to starboard. The sail structure height of the earlier submarines is 13 ft 9 in to 15 ft above the deck, with later submarines of this class having a sail height of 20 ft.

Electronics: Mk 113 torpedo fire control system which is being replaced by Mk 117.
All fitted with WSC-3 satellite communications transceiver.

Engineering: *Jack* was fitted with two propellers on one shaft (actually a single shaft within a sleeve-like shaft) and a contra-rotating turbine without a reduction gear. Both innovations were designed to reduce operating noises. To accommodate the larger turbine, the engine spaces were lengthened by 10 ft and the shaft structure was lengthened 7 ft to mount the two propellers. The propellers were of different size and smaller than in the other submarines of this class. Also eliminated in *Jack* was a clutch and secondary-propulsion electric motor. *Jack*'s propulsion arrangement provided a 10 per cent increase in power efficiency, but no increase in speed. The arrangement was not a success and was removed.



HADDOCK *7/1979, Dr. Giorgio Arra*

TINOSA *10/1979, Michael D. J. Lennon*

Names: Names changed during construction: *Plunger* ex-*Pollack*; *Barb* ex-*Pollack* ex-*Plunger*; *Pollack* ex-*Barb*.

Sonar: BQQ 2 (BQS 6 active and BQR 7 passive). The positioning of the conformal array for BQR 7 in the bow dictates the use of midships tubes.

1 "TULLIBEE" CLASS: SUBMARINE (nuclear-powered) (SSN)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
TULLIBEE	SSN 597	General Dynamics (Electric Boat Div)	26 May 1958	27 Apr 1960	9 Nov 1960	AA

Displacement, tons: 2 317 standard; 2 640 dived
Dimensions, feet (metres): 273 × 23·3 × 21 *(83·2 × 7·1 × 6·4)*
Torpedo tubes: 4—21 in *(533 mm)* Mk 64 amidships
A/S weapons: A/S torpedoes
Main machinery: 1 pressurised-water cooled S2C (Combustion Engineering) reactor; turbo-electric drive with steam turbine (Westinghouse); 2 500 shp; 1 shaft
Speed, knots: 15+ surfaced; 20+ dived
Complement: 56 (6 officers, 50 enlisted men)

Tullibee was designed specifically for anti-submarine operations and was the first US submarine with the optimum bow position devoted entirely to sonar. No additional submarine of this type was constructed because of the success of the larger, more-versatile "Thresher" class. *Tullibee* was authorised in the FY 1958 new construction programme. She is no longer considered a "first line" submarine.

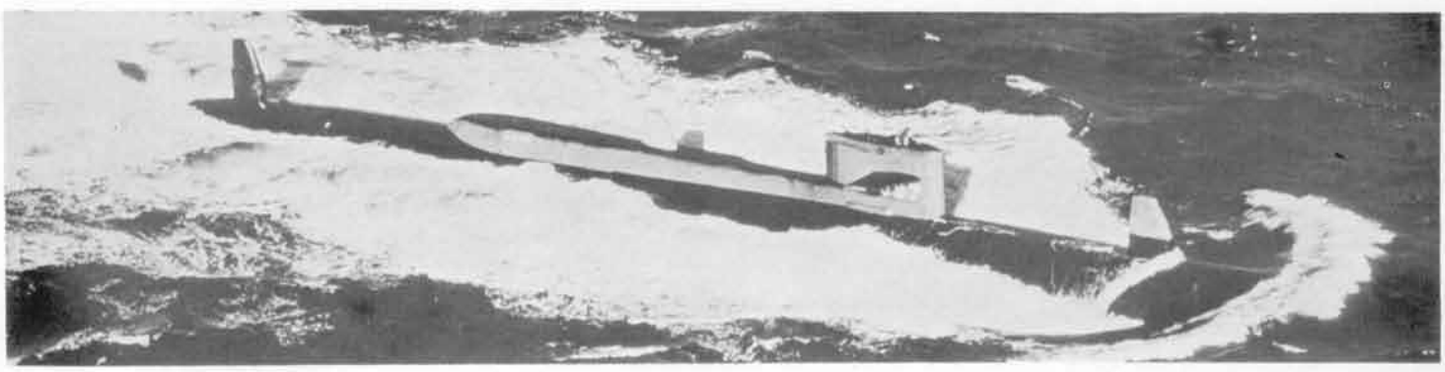
Design: She has a modified, elongated "tear-drop" hull design. Originally she was planned as a 1 000 ton craft, but reactor requirements and other considerations increased her size during design and construction.
Her four amidships torpedo tubes are angled out from the centreline two to port and two to starboard. Not fitted to fire SUBROC.

Electronics: Mk 112 torpedo fire control system.

Engineering: She has a small nuclear power plant designed and developed by the Combustion Engineering Company. The propulsion system features turbo-electric drive rather than conventional steam turbines with reduction gears in an effort to reduce operating noises.

Navigation: Fitted with Ship's Inertial Navigation System (SINS).

Sonar: BQQ 2 system (BQS 6 active and BQR 7 passive) the first submarine so fitted.
BQG 4 passive (PUFFS—Passive Underwater Fire Control Feasibility System) with three (originally two) domes on top of hull.



TULLIBEE *1968, USN*

5 "ETHAN ALLEN" CLASS: SUBMARINES (nuclear-powered) (SSN)

Name	No.	Builders	Laid down	Launched	Commissioned	FS
ETHAN ALLEN	SSN 608	General Dynamics (Electric Boat Div)	14 Sep 1959	22 Nov 1960	8 Aug 1961	PA
SAM HOUSTON	SSN 609	Newport News Shipbuilding & D.D. Co	28 Dec 1959	2 Feb 1961	6 Mar 1962	PA
THOMAS A. EDISON	SSN 610	General Dynamics (Electric Boat Div)	15 Mar 1960	15 June 1961	10 Mar 1962	PA
JOHN MARSHALL	SSN 611	Newport News Shipbuilding & D.D. Co	4 Apr 1960	15 July 1961	21 May 1962	PA
THOMAS JEFFERSON	SSN 618	Newport News Shipbuilding & D.D. Co	3 Feb 1961	24 Feb 1962	4 Jan 1963	PA

Displacement, tons: 6 955 surfaced; 7 880 dived
Dimensions, feet (metres): 410 × 33 × 32 *(125 × 10·1 × 9·8)*
Missiles: 16 tubes for Polaris A-3 SLBM (see note)
Torpedo tubes: 4—21 in *(533 mm)* bow
Main machinery: 1 pressurised-water cooled S5W (Westinghouse) reactor;
2 geared turbines (General Electric); 15 000 shp; 1 shaft
Speed, knots: 20 surfaced; 30 dived
Complement: 142 (15 officers, 127 enlisted men) (operate with two separate crews) (see note under "Lafayette" class)

These submarines were designed specifically for the ballistic missile role and are larger and better arranged than the earlier "George Washington" class submarines. The first four ships of this class were authorised in the FY 1959 programme; *Thomas Jefferson* was in the FY 1961 programme. These submarines and the previous "George Washington" class were not converted to carry the Poseidon missile because of material limitations and the age they would be after conversion.
In the FY 1981 budget, funds are included to remove this class from the SLBM force and convert them to SSNs. The conversion will include decommissioning the missile section, putting cement blocks in the missile tubes as ballast compensation and removing one of the SINS Navigation systems and the missile fire control systems. Conversion of each submarine will cost an estimated $400,000. Conversion of the three "George Washington" and five "Ethan Allen" class is to be completed by mid-FY 1984. *Ethan Allen* (SSN 608), *Sam Houston* (SSN 609) and *Thomas A. Edison* (SSN 610) are attached to Submarine Squadron 17 and are based at Bangor, Washington. *Ethan Allen* is scheduled to begin her conversion and overhaul in January 1982 at Puget Sound Naval Shipyard (see overhaul schedule), followed by *Sam Houston* and *Thomas A. Edison* in FY 1983 and the remaining two submarines of this class in FY 1984. It is planned to operate these boats as SSNs until at least the late 1980s.

Design: These submarines and the subsequent "Lafayette" class have a depth capability similar to the "Thresher" class attack submarines; pressure hulls of HY-80 steel.

Designation: SSBN 608 through 610 were reclassified as SSNs on 1 September 1980, 10 November 1980 and 6 October 1980 respectively. SSBN 611 and 618 reclassified as SSNs on 1 May 1981 and 11 March 1981 respectively.

Electronics: Fitted with WSC-3 satellite communications transceiver.

THOMAS JEFFERSON *9/1977, USN*

Fleet Status: While *John Marshall* (SSN 611) and *Thomas Jefferson* (SSN 618) are both active in the Pacific Fleet, they are homeported at Charleston, S.C.

Missiles: These ships were initially armed with the Polaris A-2 missile (1 500 n. mile range). *Ethan Allen* launched the first A-2 missile fired from a submarine on 23 October 1961. She was the first submarine to deploy with the A-2 missile, beginning her first patrol on 26 June 1962. *Ethan Allen* fired a Polaris A-2 missile in the Christmas Island Pacific Test Area on 6 May 1962 in what was the first complete US test of a ballistic missile including detonation of the nuclear warhead. All five of these submarines had been modified to fire the A-3 missile (2 500 n. mile range) prior to conversion to SSN.

Navigation: Fitted with one Mk 2 Ship's Inertial Navigation System (SINS) and navigational satellite receiver.

3 "GEORGE WASHINGTON" CLASS + 2 in RESERVE: SUBMARINES (nuclear-powered) (SSN)

Name	No.	Builders	Laid down	Launched	Commissioned	FS
GEORGE WASHINGTON	SSN 598	General Dynamics (Electric Boat Div)	1 Nov 1957	9 June 1959	30 Dec 1959	PA
PATRICK HENRY	SSN 599	General Dynamics (Electric Boat Div)	27 May 1958	22 Sep 1959	9 Apr 1960	PA
THEODORE ROOSEVELT	SSN 600	Mare Island Naval Shipyard	20 May 1958	3 Oct 1959	13 Feb 1961	PR
ROBERT E. LEE	SSN 601	Newport News Shipbuilding & D.D. Co	25 Aug 1958	18 Dec 1959	16 Sep 1960	PA
ABRAHAM LINCOLN	SSN 602	Portsmouth Naval Shipyard	1 Nov 1958	14 May 1960	11 Mar 1961	PR

Displacement, tons: 6 019 standard surfaced; 6 888 dived
Dimensions, feet (metres): 381·7 × 33 × 29
(116·3 × 10·1 × 8·8)
Missiles: 16 tubes for Polaris A-3 SLBM
Torpedo tubes: 6—21 in *(533 mm)* Mk 59 (bow)
Main machinery: 1 pressurised-water cooled S5W (Westinghouse) reactor;
2 geared turbines (General Electric); 15 000 shp; 1 shaft
Speed, knots: 20 surfaced; 31 dived
Complement: 112 (12 officers, 100 enlisted men) (operated by two crews)

George Washington was the West's first ship to be armed with ballistic missiles. A supplement to the FY 1958 new construction programme signed on 11 February 1958 provided for the construction of the first three SSBNs. The Navy ordered the just-begun attack submarine *Scorpion* (SSN 589) to be completed as a missile submarine on 31 December 1957. The hull was redesignated SSGN 598 and completed as *George Washington*. *Patrick Henry* similarly was re-ordered on the last day of 1957, her materials having originally been intended for the not-yet-started SSN 590. These submarines and three sister ships (two authorised in FY 1959) were built to a modified "Skipjack" class design with almost 130 ft being added to the original design to accommodate two rows of eight missile tubes, fire control and navigation equipment, and auxiliary machinery. All are depth limited compared with later designs.
Theodore Roosevelt (SSBN 600) and *Abraham Lincoln* (SSBN 602) arrived in Puget Sound Naval Shipyard in late 1980 for removal of their missile compartments and decommissioning. The missile compartment, consisting of frames M18 through M43, was removed in 40 segments during two separate periods. Seven segments of the compartment were removed during the first period after which all spent nuclear fuel was removed. After that was done, the remaining 33 segments were removed, following which the forward and after ends were rejoined and welded together. Both ships were decommissioned on 28 February and laid up at Bremerton. *Abraham Lincoln* and *Theodore Roosevelt* were the first two submarines to go through this process, in compliance with the SALT I treaty, because both were virtually out of fuel and had to be recored. Both being stripped for spare parts prior to disposal. Neither had made a strategic deployment since 1978. The remaining three submarines of this class have at least two to three years of fuel left; hence their retention as SSNs (see below).

THEODORE ROOSEVELT *7/1979, Dr. Giorgio Arra*

The FY 1981 budget also includes funds for the retention of *George Washington* (SSBN 598), *Patrick Henry* (SSBN 599) and *Robert E. Lee* (SSBN 601) as SSNs. The conversion will consist of the same process carried out in the five "Ethan Allen" class. As SSNs they will be primarily used for training, ASW exercises and other secondary duties which will free the more modern SSNs currently employed in this role for "front-line" duties. Due to their short-life cores and material condition it is planned to retain SSBN 598, 599 and 601 in an active status for only two to three years and then they too will be laid up.

Appearance: Note that "hump" of hull extension for housing missile tubes is more pronounced in these submarines than later classes.

Designation: Originally classified SSGN 598-600. Reclassified SSBN 598-600 on 26 June 1958. To be reclassified SSN upon completion of last SSBN patrol.

Electronics: Fitted with WSC-3 satellite communications transceiver.

Engineering: *George Washington* was the first SSBN to be overhauled and "refuelled". During her 4½ years of operation on her initial reactor core she carried out 15 submerged missile patrols and steamed more than 100 000 miles.

Missiles: These ships were initially armed with the Polaris A-1 missile (1 200 n. mile range). *George Washington* successfully fired two Polaris A-1 missiles while submerged off Cape Canaveral on 20 July 1960 in the first underwater launching of a ballistic missile from a US submarine. She departed on her initial patrol on 15 November 1960 and remained submerged for 66 days, 10 hours. All five submarines of this class were refitted to fire the improved Polaris A-3 missile (2 500 n. mile range). Missile refit and first reactor refuelling were accomplished simultaneously during overhaul. These submarines all have Mk 84 fire control systems and gas-steam missile ejectors (originally fitted with Mk 80 fire control systems and compressed air missile ejectors, changed during A-3 missile refit). These submarines will not be modified to carry and launch the advanced Poseidon ballistic missile.

Navigation: Fitted with three Mk 2 Mod 4 Ship's Inertial Navigation System (SINS) (one as SSN) and navigational satellite receiver.

5 "SKIPJACK" CLASS: SUBMARINES (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
SKIPJACK	SSN 585	General Dynamics (Electric Boat Div)	29 May 1956	26 May 1958	15 Apr 1959	AA
SCAMP	SSN 588	Mare Island Naval Shipyard	23 Jan 1959	8 Oct 1960	5 June 1961	AA
SCULPIN	SSN 590	Ingalls Shipbuilding Corp	3 Feb 1958	31 Mar 1960	1 June 1961	AA
SHARK	SSN 591	Newport News S.B. & D.D. Co	24 Feb 1958	16 Mar 1960	9 Feb 1961	AA
SNOOK	SSN 592	Ingalls Shipbuilding Corp	7 Apr 1958	31 Oct 1960	24 Oct 1961	PA

Displacement, tons: 3 075 surfaced; 3 513 dived
Dimensions, feet (metres): 251·7 × 31·5 × 29·4 *(76·7 × 9·6 × 8·9)*
Torpedo tubes: 6—21 in *(533 mm)* bow (Mk 59)
A/S weapons: A/S torpedoes
Main machinery: 1 pressurised-water cooled S5W (Westinghouse) reactor; 2 steam turbines (Westinghouse in *Skipjack*; General Electric in others); 15 000 shp; 1 shaft
Speed, knots: 16+ surfaced; 30+ dived
Complement: 93 (8 officers, 85 enlisted men)

Combine the high-speed endurance of nuclear propulsion with the high-speed "tear-drop" "Albacore" hull design. *Skipjack* was authorised in the FY 1956 new construction programme and the five other submarines of this class were authorised in FY 1957. These submarines are still considered suitable for "first line" service. Each cost approximately $40 million.
Scorpion (SSN 589) of this class was lost some 400 miles southwest of the Azores while *en route* from the Mediterranean to Norfolk, Virginia, in May 1968. She went down with 99 men on board.

Construction: *Scorpion*'s keel was laid down twice; the original keel, laid down on 1 November 1957, was renumbered SSBN 598 and became the Polaris submarine *George Washington;* the second SSN 589 keel became *Scorpion*. *Scamp*'s keel laying was delayed when materiel for her was diverted to SSBN 599. This class introduced the Newport News Shipbuilding and Dry Dock Company and the Ingalls Shipbuilding Corporation to nuclear submarine construction. Newport News had not previously built submarines since before World War I.

Design: *Skipjack* was the first US nuclear submarine built to the "tear-drop" design. These submarines have a single propeller shaft (instead of two in earlier nuclear submarines) and their diving planes are mounted on sail structures to improve underwater manoeuvrability. No after torpedo tubes are fitted because of their tapering sterns.

Electronics: Fitted with Mk 101 Mod 17 TFCS.

Engineering: The "Skipjack" class introduced the S5W fast attack submarine propulsion plant which has been employed in all subsequent US attack and ballistic missile submarines except the "Los Angeles" class (SSN 688) *Narwhal* (SSN 671) and *Glenard P. Lipscomb* (SSN 685). The plant was developed by the Bettis Atomic Power Laboratory.

Sonar: Modified BQS 4.

SCAMP *12/1976, Dr. Giorgio Arra*

SCAMP *12/1976, Dr. Giorgio Arra*

1 "HALIBUT" CLASS: SUBMARINE (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
HALIBUT	SSN 587	Mare Island Naval Shipyard, Vallejo, Calif	11 Apr 1957	9 Jan 1959	4 Jan 1960	PR

Displacement, tons: 3 850 standard; 5 000 dived
Dimensions, feet (metres): 350 × 29·5 × 21·5 *(106·6 × 9 × 6·5)*
Torpedo tubes: 6—21 in *(533 mm)* 4 bow (Mk 61); 2 stern (Mk 62)
Main machinery: 1 pressurised-water cooled S3W (Westinghouse) reactor; 2 steam turbines (Westinghouse); 6 600 shp; 2 shafts
Speed, knots: 15+ surfaced; 20+ dived
Complement: 98 (10 officers, 88 enlisted men)

Halibut is believed to have been the first submarine designed and constructed specifically to fire guided missiles.
She was originally intended to have diesel-electric propulsion but on 27 February 1956 the Navy announced she would have nuclear propulsion. She was the US Navy's only nuclear-powered guided missile submarine (SSGN) to be completed. Authorised in the FY 1956 new construction programme and built for an estimated cost of $45 million.

She was reclassified as an attack submarine on 25 July 1965 after the Navy discarded the Regulus submarine-launched missile force. Her missile equipment was removed. Reportedly she has been fitted with a ducted bow thruster to permit precise control and manoeuvring, when active employed on research duties.
She can carry the 50 ft Deep Submergence Rescue Vehicle (DSRV) and other submersibles on her after deck and operate these while dived.
Decommissioned on 30 June 1976 and laid up at Bremerton.

Design: Built with a large missile hangar faired into her bow (see *picture)*. Her hull was intended primarily to provide a stable surface launching platform rather than for speed or manoeuvrability.

Electronics: Mk 101 Mod 11 torpedo fire control system (removed 1977).

Missiles: Designed to carry two Regulus II surface-to-surface missiles. The Regulus II was a transonic missile which could carry a nuclear warhead and had a range of 1 000 miles. The Regulus II was cancelled before becoming operational and *Halibut* operated from 1960 to 1964 carrying five Regulus I missiles, subsonic cruise missiles which could deliver a nuclear warhead on targets 575 n. miles from launch.
During this period the US Navy operated a maximum of five Regulus guided (cruise) missile submarines, *Halibut*, the post-war constructed *Grayback* (SSG 574 now SS 574) and *Growler* (SSG 577), and the World War II-built *Tunny* (SSG 282 subsequently LPSS 282) and *Barbero* (SSG 317).
As SSGN 587 *Halibut* carried a complement of 11 officers and 108 enlisted men.

Navigation: Fitted with Ship's Inertial Navigation System (SINS).

Sonar: BQS 4.

HALIBUT (with DSRV embarked) *1970, USN*

1 "TRITON" CLASS: SUBMARINE (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FiS*
TRITON	SSN 586	General Dynamics (Electric Boat Div)	29 May 1956	19 Aug 1958	10 Nov 1959	AR

Displacement, tons: 5 940 surfaced; 6 670 dived
Dimensions, feet (metres): 447 × 37 × 24 *(136·2 × 11·3 × 7·3)*
Torpedo tubes: 6—21 in *(533 mm)* 4 bow; 2 stern (Mk 60)
Main machinery: 2 pressurised-water cooled S4G (General Electric) reactors;
2 steam turbines (General Electric); 34 000 shp; 2 shafts
Speed, knots: 27+ surfaced; 20+ dived
Complement as SSRN: 170 (14 officers, 156 enlisted men)

Triton was designed and constructed to serve as a radar picket submarine to operate in conjunction with surface carrier task forces.
Authorised in the FY 1956 new construction programme and built for an estimated cost of $109 million.
Triton circumnavigated the globe in 1960, remaining submerged except when her sail structure broke the surface to enable an ill sailor to be taken off near the Falkland Islands. The 41 500 mile cruise took 83 days and was made at an average speed of 18 knots.
Reclassified as an attack submarine (SSN) on 1 March 1961 as the Navy dropped the radar picket submarine programme (SSRN 586). She is no longer considered a "first line" submarine and was decommissioned on 3 May 1969 to become the first US nuclear submarine placed in preservation. Laid up at Norfolk.

TRITON *1966, USN*

There had been proposals to operate the *Triton* as an underwater national command post afloat, but no funds were provided.

Design: *Triton* was fitted with large radar antenna which retracted into the sail structure and an elaborate combat information centre. Until the Trident SSBN programme *Triton* was the longest US submarine ever constructed.

Electronics: Mk 101 Mod 11 torpedo fire control system.

Engineering: *Triton* is the only US submarine with two nuclear reactors. The Atomic Energy Commission's Knolls Atomic Power Laboratory was given prime responsibility for development of the power plant. After 2½ years of operation, during which she steamed more than 110 000 miles, *Triton* was overhauled and refuelled from July 1962 to March 1964.

Sonar: BQS 4.

4 "SKATE" CLASS: SUBMARINES (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FiS*
SKATE	SSN 578	General Dynamics (Electric Boat Div)	21 July 1955	16 May 1957	23 Dec 1957	PA
SWORDFISH	SSN 579	Portsmouth Naval Shipyard	25 Jan 1956	27 Aug 1957	15 Sep 1958	PA
SARGO	SSN 583	Mare Island Naval Shipyard	21 Feb 1956	10 Oct 1957	1 Oct 1958	PA
SEADRAGON	SSN 584	Portsmouth Naval Shipyard	20 June 1956	16 Aug 1958	5 Dec 1959	PA

Displacement, tons: 2 310 light; 2 360 full load (578-9);
2 384 light; 2 547 full load (583-4)
Dimensions, feet (metres): 267·7 × 25 × 22 *(81·5 × 7·6 × 6·7)*
Torpedo tubes: 8—21 in *(533 mm)* 6 bow; 2 stern (short)
Main machinery: 1 pressurised-water cooled S3W (Westinghouse) reactor in *Skate* and *Sargo*, 1 pressurised-water cooled S4W (Westinghouse) in *Swordfish* and *Seadragon;*
2 steam turbines (Westinghouse); 6 600 shp; 2 shafts
Speed, knots: 20+ surfaced; 25+ dived
Complement: 87 (11 officers, 76 enlisted men)

The first production model nuclear-powered submarines, similar in design to *Nautilus* but smaller. *Skate* and *Swordfish* were authorised in the FY 1955 new construction programme and *Sargo* and *Seadragon* in FY 1956.
Skate was the first submarine to make a completely submerged transatlantic crossing. In 1958 she established a (then) record of 31 days submerged with a sealed atmosphere, on 11 August 1958 she passed under the ice at the North Pole during a polar cruise, and on 17 March 1959 she became the first submarine to surface at the North Pole. *Sargo* undertook a polar cruise during January-February 1960 and surfaced at the North Pole on 9 February 1960.
Seadragon sailed from the Atlantic to the Pacific via the North-west Passage (Lancaster Sound, Barrow and McClure Straits) in August 1960. *Skate,* operating from New London, Connecticut and *Seadragon,* based at Pearl Harbour, rendezvoused under the ice at the North Pole on 2 August 1962 and then conducted anti-submarine exercises under the polar ice pack and surfaced together at the North Pole.

SKATE *5/1980, Dr. Giorgio Arra*

Skate also operated in the Arctic Ocean during April-May 1969, conducting exercises under the Arctic ice pack with the later nuclear-powered attack submarines *Pargo* and *Whale;* and again during the spring of 1971 with the nuclear attack submarine *Trepang.*

Electronics: Fitted with Mk 101 Mod 19 torpedo fire control system.

Engineering: The reactors for this class were developed by the Atomic Energy Commission's Bettis Atomic Power Laboratory, the new propulsion system was similar to that of *Nautilus* but considerably simplified with improved operation and maintenance. The propulsion plant developed under this programme had two arrangements, the S3W configuration in *Skate, Sargo* and *Halibut* and the S4W configuration in *Swordfish* and *Seadragon.* Both arrangements proved satisfactory. *Skate* began her first overhaul and refuelling in January 1961 after steaming 120 862 miles on her initial reactor core during three years of operation. *Swordfish* began her first overhaul and refuelling in early 1962 after more than three years of operation in which time she steamed 112 000 miles.

Sonar: BQS 4.

1 "SEAWOLF" CLASS: SUBMARINE (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FiS*
SEAWOLF	SSN 575	General Dynamics (Electric Boat Div)	15 Sep 1953	21 July 1955	30 Mar 1957	PA

Displacement, tons: 3 765 surfaced; 4 200 dived
Dimensions, feet (metres): 337·5 × 27·7 × 23 *(102·9 × 8·4 × 7)*
Torpedo tubes: 6—21 in *(533 mm)* bow
Main machinery: 1 pressurised-water cooled S2Wa (Westinghouse) reactor;
2 steam turbines (General Electric), 15 000 shp; 2 shafts
Speed, knots: 20+ surfaced; 20+ dived
Complement: 101 (11 officers, 90 enlisted men)

Seawolf was the world's second nuclear-propelled vehicle; she was constructed almost simultaneously with *Nautilus* to test a competitive reactor design. Funds for *Seawolf* were authorised in the FY 1952 new construction programme.
She is no longer considered a "first line" submarine and has been engaged primarily in research work since 1969.

Design: GUPPY-type hull with stepped sail.

Electronics: Mk 101 Mod 8 torpedo fire control system.

Engineering: *Nautilus* was provided with a pressurised-water reactor plant and *Seawolf* was fitted initially with a liquid-metal (sodium) reactor. Originally known as the Submarine Intermediate Reactor (SIR), the liquid-metal plant was developed by the Atomic Energy Commission's Knolls Atomic Power Laboratory.
The SIR Mark II/S2G reactor in *Seawolf* achieved initial criticality on 25 June 1956. Steam leaks developed during the dockside testing. The plant was shut down and it was determined that the leaks were caused by sodium-potassium alloy which had entered the super-heater steam piping. After repairs and testing *Seawolf* began sea trials on 21 January 1957. The trials were run at reduced power and after two years of operation *Seawolf* entered the Electric Boat yard for removal of her sodium-cooled plant and installation of a pressurised-water plant similar to that installed in *Nautilus* (designated S2Wa). When the original *Seawolf* plant was shut down in December 1958 the submarine had steamed a total of 71 611 miles. She was recommissioned on 30 September 1960. The pressurised-water reactor was refuelled for the first time between May 1965 and August 1967, having propelled *Seawolf* for more than 161 000 miles on its initial fuel core.

SEAWOLF *1977, USN*

Sonar: BQS 4.

1 "NAUTILUS" CLASS: SUBMARINE (nuclear-powered) (SSN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
NAUTILUS	SSN 571	General Dynamics (Electric Boat Div)	14 June 1952	21 Jan 1954	30 Sep 1954	PR

Displacement, tons: 3 764 surfaced; 4 040 dived
Dimensions, feet (metres): 319·4 × 27·6 × 22 *(97·4 × 8·4 × 6·7)*
Torpedo tubes: 6—21 in *(533 mm)* bow (Mk 50)
Main machinery: 1 pressurised-water cooled S2W (Westinghouse) reactor; 2 steam turbines (Westinghouse), approx 15 000 shp; 2 shafts
Speed, knots: 20+ surfaced; 20+ dived
Complement: 105 (13 officers, 92 enlisted men)

NAUTILUS *1975, General Dynamics, (Electric Boat Division)*

Nautilus was the world's first nuclear-propelled vessel. She predated the first Soviet nuclear-powered submarine by an estimated five years.
The funds for her construction were authorised in the FY 1952 budget. She put to sea for the first time on 17 January 1955 and signalled the historic message: "Underway on nuclear power".
On her shakedown cruise in May 1955 she steamed submerged from London, Connecticut, to San Juan, Puerto Rico, travelling more than 1 300 miles in 84 hours at an average speed of almost 16 knots; she later steamed submerged from Key West, Florida, to New London, a distance of 1 397 miles, at an average speed of more than 20 knots.
During 1958 she undertook extensive operations under the Arctic ice pack and in August she made history's first polar transit from the Pacific to the Atlantic, steaming from Pearl Harbor to Portland, England. Under the ice she passed the geographic North Pole on 3 August 1958.
During 1972-74 she underwent a 30 month overhaul and modification at the Electric Boat yard in Groton, Connecticut, where the submarine was built. Modified for submarine communications research.
When it was announced that *Nautilus* was to begin decommissioning in FY 1979, the plan was to preserve her as a memorial at the United States Naval Academy, Annapolis, Maryland. Shortly after the announcement, the Submarine Memorial Association Inc, Groton, Connecticut, which has custody of *Croaker* (SS 246) decided to ask that they be given the *Nautilus* for preservation at "her birthplace" alongside *Croaker*. The resultant uncertainty was resolved on 30 October 1979 when Secretary of the Navy, Edward Hidalgo, announced that the Old Marine Railway Slip at the Washington Navy Yard would be *Nautilus*'s final berthing place. The fact that the reactor and its components will be retained in *Nautilus*, "in a defuelled and mothballed state", means a need for proper security of the reactor area and other compartments; she was decommissioned on 3 March 1980 at Mare Island and it is planned to prepare her for public exhibit in FY 1981. Cost will be about $5 million. Preparations will include breaching the pressure hull to create a public entrance way. After preparation, it will cost about $600 000 each year to maintain the submarine who will have a token crew of 2 officers and 24 enlisted men.
In the autumn of 1980 President Carter over-rode the Secretary's decision and instructed that she should be transferred to Groton. How this decision will be affected by the arrival of a new Administration remains to be seen.

Electronics: Mk 101 Mod 6 torpedo fire control system.

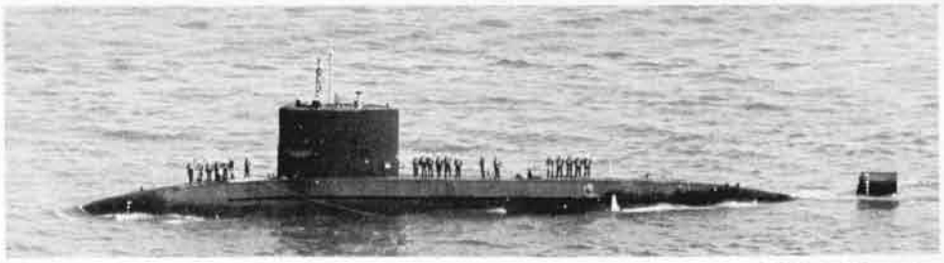
Engineering: In January 1948 the Department of Defense requested the Atomic Energy Commission to undertake the design, development, and construction of a nuclear reactor for submarine propulsion. Initial research and conceptual design of the Submarine Thermal Reactor (STR) was undertaken by the Argonne National Laboratory. Subsequently the Atomic Energy Commission's Bettis Atomic Power Laboratory, operated by the Westinghouse Electric Corporation, undertook development of the first nuclear propulsion plant.
Nautilus STR Mark II nuclear plant (redesignated S2W) was first operated on 20 December 1954 and first developed full power on 3 January 1955.
After more than two years of operation, during which she steamed 62 562 miles, she began an overhaul which included refuelling in April 1957. She was again refuelled in 1959 after steaming 91 324 miles on her second fuel core, and again in 1964 after steaming approximately 150 000 miles on her third fuel core.

Sonar: BQS 4.

3 "BARBEL" CLASS: SUBMARINES (SS)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
BARBEL	SS 580	Portsmouth Naval Shipyard	18 May 1956	19 July 1958	17 Jan 1959	PA
BLUEBACK	SS 581	Ingalls Shipbuilding Corp	15 Apr 1957	16 May 1959	15 Oct 1959	PA
BONEFISH	SS 582	New York Shipbuilding Corp	3 June 1957	22 Nov 1958	9 July 1959	PA

Displacement, tons: 2 145 surfaced; 2 894 dived
Dimensions, feet (metres): 219·1 × 29 × 28 *(66·8 × 8·8 × 8·5)*
Torpedo tubes: 6—21 in *(533 mm)* bow (Mk 58)
Main machinery: 3 diesels; 4 800 bhp (Fairbanks-Morse); 2 electric motors (General Electric); 3 150 shp; 1 shaft
Speed, knots: 15 surfaced; 21 dived
Complement: 77 (8 officers, 69 men)



BARBEL *9/1979, Dr. Giorgio Arra*

These submarines were the last non-nuclear combatant submarines built by the US Navy. All three were authorised in the Fiscal Year 1956 new construction programme.

Construction: *Blueback* was the first submarine built by the Ingalls Shipbuilding Corp at Pascagoula, Mississippi, and *Bonefish* was the first constructed at the New York Shipbuilding Corp yard in Camden, New Jersey.

Design: These submarines have the "tear drop" hull design which was tested in the experimental submarine *Albacore*. As built, their fore planes were bow-mounted; subsequently moved to the sail.
They introduced a new concept in centralised arrangement of controls in an "attack centre" to increase efficiency; which has been adapted for all later US combat submarines.

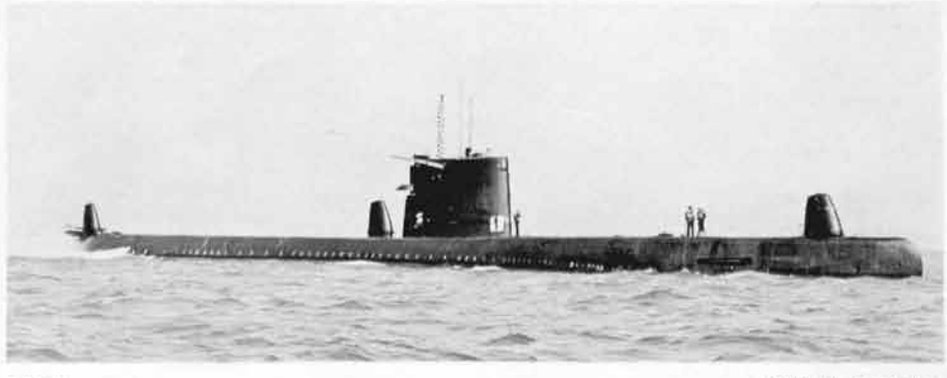
Electronics: Mk 101 Mod 20 torpedo fire control system.

Sonar: BQS 4.

1 "DARTER" CLASS: SUBMARINE (SS)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
DARTER	SS 576	General Dynamics (Electric Boat Div)	10 Nov 1954	28 May 1956	26 Oct 1956	PA

Displacement, tons: 1 720 surfaced; 2 388 dived
Dimensions, feet (metres): 284·5 × 27·2 × 19 *(86·7 × 8·3 × 5·8)*
Torpedo tubes: 8—21 in *(533 mm)* 6 bow; 2 stern
Main machinery: 3 diesels (Fairbanks-Morse); 4 500 bhp; 2 electric motors (Elliott); 5 500 shp; 2 shafts
Speed, knots: 19·5 surfaced; 14 dived
Complement: 83 (8 officers, 75 men)



DARTER *1/1980, Dr. Giorgio Arra*

Planned sister submarines *Growler* and *Grayback* were completed to missile-launching configuration.
Basic design of *Darter* is similar to the "Tang" class below. Authorised in the FY 1954 shipbuilding programme. No additional submarines of this type were built because of shift to high-speed hull design and nuclear propulsion.
Home port shifted to Sasebo, Japan in March 1979 making her and *Grayback* the only US submarines homeported overseas. To decommission in FY 1982.

Electronics: Mk 106 Mod 11 torpedo fire control system.

Sonar: BQG 4 (PUFFS).

2 "TANG" CLASS: SUBMARINES (SS and SSAG)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
WAHOO	SS 565	Portsmouth Naval Shipyard	24 Oct 1949	16 Oct 1951	30 May 1952	AR
GUDGEON	SSAG 567	Portsmouth Naval Shipyard	20 May 1950	11 June 1952	21 Nov 1952	PA

Displacement, tons: 2 050 standard; 2 700 dived
Dimensions, feet (metres): 287 × 27·3 × 19 *(87·4 × 8·3 × 5·8)*
Torpedo tubes: 8—21 in *(533 mm)* 6 bow; 2 stern
Main machinery: 3 diesels (Fairbanks-Morse); 4 500 bhp; 2 electric motors; 5 600 shp; 2 shafts
Speed, knots: 15·5 surfaced; 16 dived
Complement: 83 (8 officers, 75 men)

Six submarines of this class were constructed, incorporating improvements based on German World War II submarine developments. *Wahoo* was authorised in FY 1948, and *Gudgeon* in FY 1949. *Gudgeon* was the first US submarine to circumnavigate the world during September 1957-February 1958. Modernised under FRAM II programme.
The three survivors of this class were to be transferred to Iran (see *Transfer* note below) and *Wahoo* was half way through a two year overhaul when Iran cancelled the project on 31 March 1979. The overhaul was cancelled and, still in a dismantled condition, she was finally decommissioned on 27 June 1980 and laid up in reserve at Philadelphia.

Classification: On 1 April 1979 *Gudgeon* reclassified as AGSS for acoustic research as replacement for *Tang*, being later reclassified as SSAG on 5 November 1979.

GUDGEON *1978, Dr. Giorgio Arra*

Electronics: Mk 106 Mod 18 torpedo fire control system.

Sonar: BQG 4 (PUFFS).

Transfers: *Trigger* (SS 564) was transferred to Italy on 10 July 1973 and *Harder* (SS 568) followed on 15 March 1974.
Trout (SS 566) was transferred to Iran on 19 December 1978 at New London. Her acquisition was officially cancelled on 3 February 1979. She lay at New London until late 1979, with a token crew, when she was towed to Philadelphia and laid up in reserve. At the time of the cancellation of her acquisition, Iran asked that the USA act as an agent for her resale. As of 1 January 1980 a customer had not been found. *Wahoo* (SS 565) was also to be transferred to Iran, but her acquisition was also cancelled (see above notes). *Tang* (SS 563) was the third submarine to be transferred to Iran, but her acquisition was cancelled on 3 February 1979 and she was later leased to Turkey on 8 February 1980.

1 "GRAYBACK" CLASS: SUBMARINE (SS, ex-LPSS)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
GRAYBACK	SS 574 (ex-LPSS 574, ex-SSG 574)	Mare Island Naval Shipyard	1 July 1954	2 July 1957	7 Mar 1958	PA

Displacement, tons: 2 670 standard; 3 650 dived
Dimensions, feet (metres): 334 × 27·2 × 19 *(101·8 × 8·3 × 5·8)*
Torpedo tubes: 8—21 in *(533 mm)* 6 bow (Mk 52); 2 stern (Mk 53)
Main machinery: 3 diesels (Fairbanks-Morse); 4 500 bhp; 2 electric motors (Elliott); 5 500 shp; 2 shafts
Speed, knots: 20 surfaced; 16·7 dived
Complement: 89 (12 officers, 77 enlisted men)
Troops: 67 (7 officers, 60 enlisted men)

Grayback was originally intended to be an attack submarine of the "Darter" class, being authorised in the FY 1953 new construction programme, but redesigned in 1956 to provide a Regulus missile launching capability; completed as SSG 574 in 1958. Homeported in Subic Bay.

GRAYBACK *3/1980, Dr. Giorgio Arra*

Classification: *Grayback* was reclassified as an attack submarine (SS) on 30 June 1975 although she retains a transport configuration and capabilities. The reclassification was an administrative change associated with funding support.

Conversion: She began conversion to a transport submarine at Mare Island in November 1967. The conversion was originally estimated at $15·2 million but was actually about $30 million. She was reclassified from SSG to LPSS on 30 August 1968 (never officially designated APSS).
During conversion she was fitted to berth and mess 67 troops and carry their equipment including landing craft or swimmer delivery vehicles (SDV). Her torpedo tubes and hence attack capability are retained. As completed (SSG) she had an overall length of 322 ft 4 in; lengthened 12 ft during LPSS conversion. Conversion was authorised in the FY 1965 programme and completed with her new commissioning on 9 May 1969; delayed because of higher priorities being allocated to other submarine projects.

Electronics: Mk 106 Mod 12 torpedo fire control system.

Sonar: BQG 2; BQS 4 (PUFFS).

1 "DOLPHIN" CLASS: AUXILIARY SUBMARINE (AGSS)

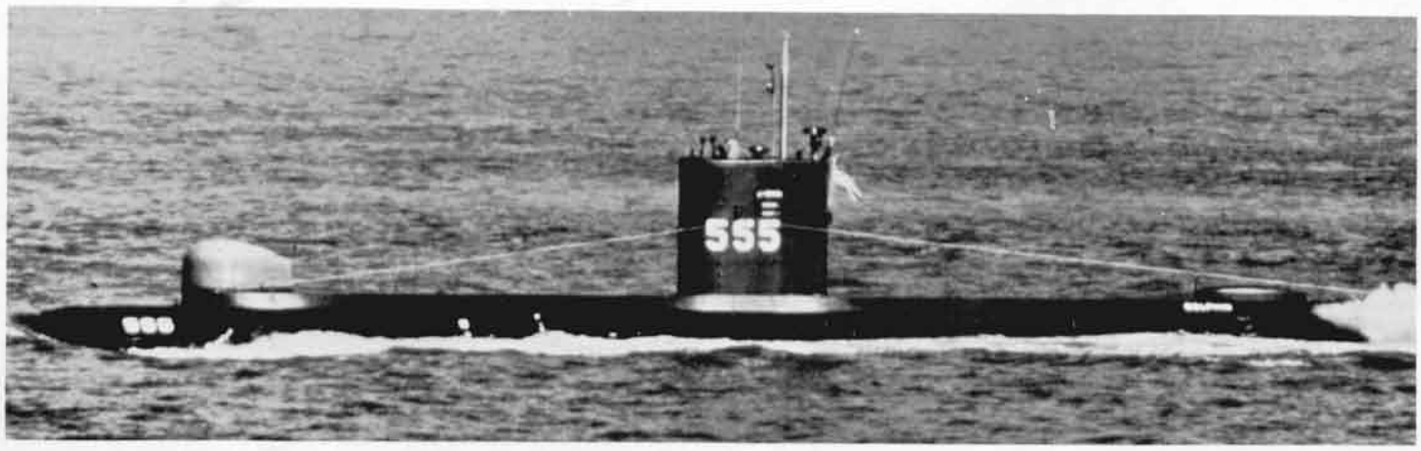
Name	No.	Builders	Laid down	Launched	Commissioned	F/S
DOLPHIN	AGSS 555	Portsmouth Naval Shipyard	9 Nov 1962	8 June 1968	17 Aug 1968	PA

Displacement, tons: 800 standard; 930 full load
Dimensions, feet (metres): 152 × 19·3 × 18 *(46·3 × 5·9 × 5·5)*
Torpedo tubes: Removed
Main machinery: Diesel-electric (2 Detroit 12 V71 diesels), 1 650 hp; 1 shaft
Speed, knots: 15+ dived
Complement: 22 (7 officers, 15 enlisted men) plus 4 to 7 scientists

Specifically designed for deep-diving operations. Authorised in the FY 1961 new construction programme but delayed because of changes in mission and equipment coupled with higher priorities being given to other submarine projects. Fitted for deep-ocean sonar and oceanographic research. She is highly automated and has three computer-operated systems, a safety system, hovering system, and one that is classified. The digital-computer submarine safety system monitors equipment and provides data on closed-circuit television screens; malfunctions in equipment set off an alarm and if they are not corrected within the prescribed time the system, unless overridden by an operator, automatically brings the submarine to the surface. There are several research stations for scientists and she is fitted to take water samples down to her operating depth.
Underwater endurance is limited (endurance and habitability were considered of secondary importance in design).
Assigned to Submarine Development Group 1 at San Diego.

Design: Has a constant diameter cylindrical pressure hull approximately 15 ft in outer diameter closed at both ends with hemispherical heads. Pressure hull fabricated of HY-80 steel with aluminium and fibre-glass used in secondary structures to reduce weight. No conventional hydroplanes are mounted, improved rudder design and other features provide manoeuvring control and hovering capability.

Engineering: Fitted with 330 cell silver-zinc battery. Submerged endurance is approximately 24 hours with an at-sea endurance of 14 days.



DOLPHIN *USN*

AIRCRAFT CARRIERS

The US Navy currently operates 13 aircraft carriers (one of which is always in SLEP overhaul): eleven ships of post-World War II construction (including three nuclear powered) and two "Midway" class ships completed shortly after the war. In addition, an obsolescent "Intrepid" class ship serves as a training carrier. *Coral Sea* has no assigned air wing and is kept available for contingency use.

One additional nuclear carrier is under construction, *Carl Vinson* (CVN 70), to commission in 1981 and a further ship (CVN 71) approved in FY 1980 budget. Two more CVNs may be requested by the new Administration.

With the ever increasing size and costs of aircraft carriers, alternative designs to the "Nimitz" class have been sought to maintain a planned force level of 12 carriers beyond the mid-1980s when the first of the "Forrestal" class nears the end of its service life. Among the alternatives discussed was a concept known as "CVNX". A Navy study group, at the request of the then Secretary of Defense, James R. Schlesinger, was formed and directed to examine the feasibility of constructing "medium" size aircraft carriers of approx 50 000 tons standard displacement as an alternative to the "Nimitz" class. The group submitted its report in January 1976. Known collectively as the "CVNX" concept, it proposed three designs for further development (see 1976-77 edition of *Jane's Fighting Ships*, page 560, bottom for further details). This concept was later discarded only to be resurrected in 1978. The current planned procurement of a fourth "Nimitz" class (CVN 71), for which long term lead items were requested under the FY 1977, had been held in abeyance while the "Medium-sized" aircraft carrier (CVV) was re-evaluated.

The procurement of a fourth "Nimitz" class, added to the FY 1979 budget by Congress was dropped on 17 August 1978 when the entire FY 1979 defense budget was vetoed by President Carter. One CVV was to be requested under the FY 1980 programme but Congress rejected the "CVV" design and approved the construction of a fourth "Nimitz" class. The alternative, a modified "J. F. Kennedy" class was rejected by Congress and the President finally approved the inclusion of CVN 71 in the defense budget. (For details of CVV design see page 674 of the 1979-80 edition). It is the US Navy's plan to rely on a force of 12 CVN/CVs during the 1990s.

Air Wings: Each large aircraft carrier (CV/CVN) normally operates an air wing of some 85 to 95 aircraft: two fighter squadrons of 24 F-4 Phantom or F-14 Tomcats; two light attack squadrons of 24 A-7 Corsairs; one medium attack squadron of 12 A-6 Intruders; one anti-submarine squadron of ten S-3 Viking aircraft; one A/S squadron of eight SH-3 Sea King helicopters; and smaller squadrons or detachments of three RA-5C Vigilante reconnaissance aircraft, four EA-6B Prowler electronic warfare aircraft, four KA-6 Intruder tankers, and four E-2 Hawkeye early-warning/control aircraft.

The "Midway" class carriers cannot accommodate the full wing described above.

The carriers generally also embark a Carrier On-board Delivery (COD) aircraft in addition to the air wing.

Classification: From 1972 onward attack aircraft carriers (CVA) were reclassified as aircraft carriers (CV) upon being fitted with anti-submarine control centres and facilities to support A/S aircraft and helicopters (in addition to fighter/attack aircraft). The muti-purpose configuration was dictated by the phasing out of dedicated anti-submarine aircraft carriers (CVS), the last being decommissioned in 1974.

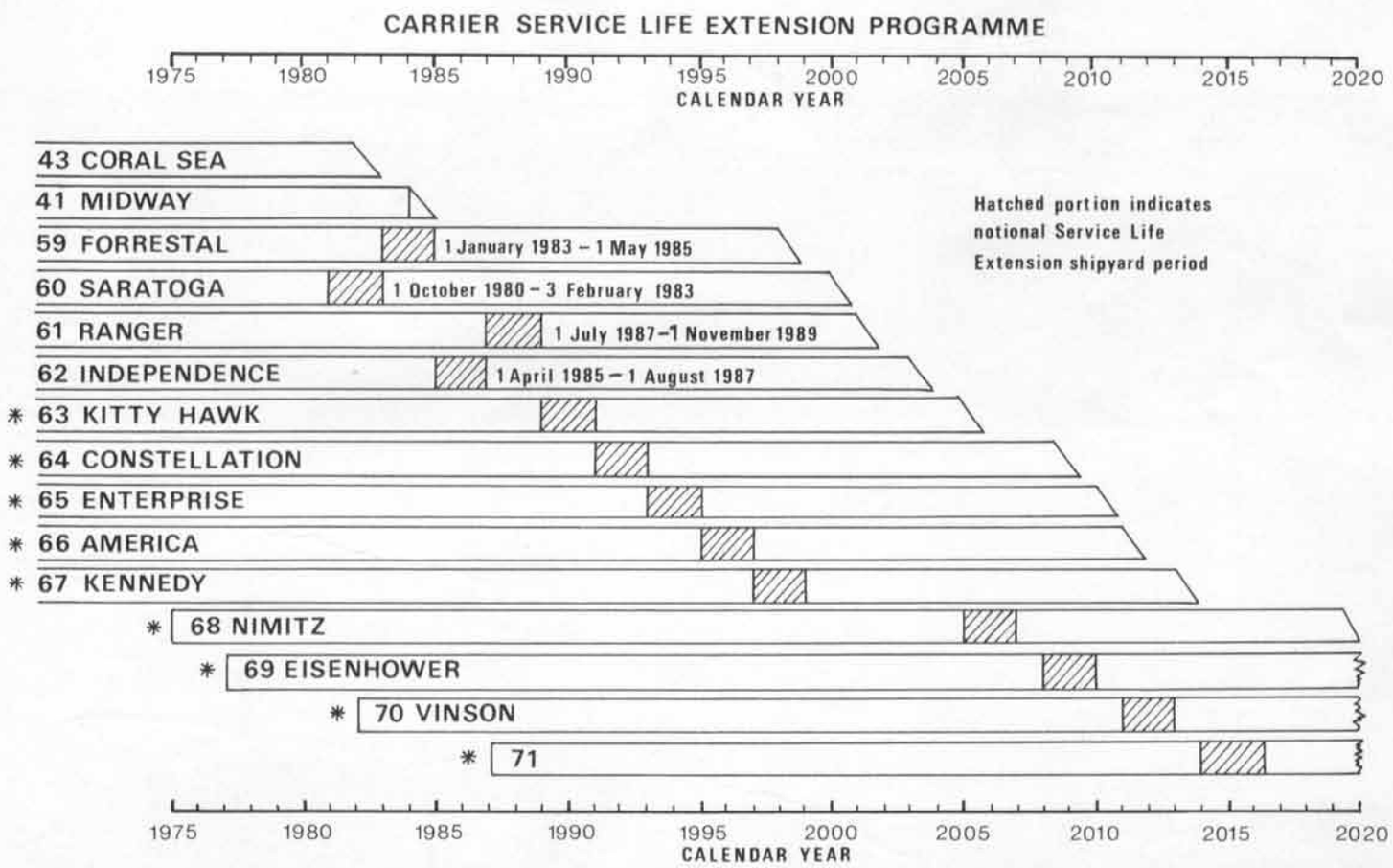
All active ships still classified as attack aircraft carriers (CVA/CVAN) on 30 June 1975 were changed to CV/CVN regardless of their ability to support anti-submarine aircraft.

Service Life Extension Programme (SLEP): Beginning with the FY 1980 programme, the Carrier Service Life Extension Programme (SLEP) was initiated. Each carrier, beginning with *Saratoga* (CV 60), will undergo a 28-month modernisation and overhaul which is designed to extend each ship's life by 10-15 years. This includes replacement of catapults by Mk C13 (295 ft long); updating of aircraft department to operate F14 Tomcat, F18 Hornet and S3 Viking; modernisation of electronics and radars to include improved NTDS, ASCAS (anti-submarine classification and analysis centre), SPS 49 radar in place of SPS 40; SPS 43C in place of 43A; installation of three NATO Sea Sparrow and three Vulcan Phalanx; extensive refit of hull, propulsion and electrics.

The chart below shows the long term implications of the SLEP. Also shown are the projected retirement dates of the ships after they have been through the SLEP as well as the retirement dates of the two remaining "Midway" class ships.

Training Carrier: The "Intrepid" class carrier *Lexington* (AVT 16) operates as a training ship and is based at Pensacola, Florida. The ship has no aircraft maintenance or arming capabilities, and is not considered as a combat ship. In an emergency, aircraft could be embarked on a very restricted operational basis.

Names: US aircraft carriers traditionally have been named for American battles and earlier Navy ships. However, during the past few years they have increasingly been named for statesmen and naval leaders.



2 + 1 + 1 "NIMITZ" CLASS: MULTI-PURPOSE AIRCRAFT CARRIERS (nuclear propulsion) (CVN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
NIMITZ	CVN 68	Newport News Shipbuilding & Dry Dock Co	22 June 1968	13 May 1972	3 May 1975	AA
DWIGHT D. EISENHOWER	CVN 69	Newport News Shipbuilding & Dry Dock Co	15 Aug 1970	11 Oct 1975	18 Oct 1977	AA
CARL VINSON	CVN 70	Newport News Shipbuilding & Dry Dock Co	11 Oct 1975	15 Mar 1980	Mar 1982	Bldg
—	CVN 71	Newport News Shipbuilding & Dry Dock Co	Dec 1981	Sep 1985	Sep 1987	Ord

Displacement, tons: 72 700 light; 81 600 standard; 91 487 full load (96 351, CVN 71)
Dimensions, feet (metres): 1 092 × 134 × 37 *(332·9 × 40·8 × 11·3)*
Flight deck width, feet (metres): 252 *(76·8)* (257 *(78·4)* CVN 71)
Catapults: 4 steam (C13-1)
Aircraft: 90+
Missiles: 3 Basic Point Defence Missile System (BPDMS) launchers with Sea Sparrow missiles (see notes)
Guns: See notes
Main engines: 4 Geared steam turbines; 260 000 shp; 4 shafts
Nuclear reactors: 2 pressurised-water cooled (A4W/A1G)
Speed, knots: 30+
Complement: 3 300 plus 3 000 assigned to air wing for a total of 6 300 per ship

The lead ship for this class and the world's second nuclear-powered aircraft carrier was ordered 9½ years after the first such ship, *Enterprise* (CVN 65). *Nimitz* was authorised in the FY 1967 new construction programme; *Dwight D. Eisenhower* in the FY 1970 programme; *Carl Vinson* in the FY 1974 programme and CVN 71 in the FY 1980 programme. Ordered 30 September 1980. The builders are the only US shipyard now capable of constructing large, nuclear-propelled warships. The completion of the first two ships was delayed almost two years because of delays in the delivery and testing of nuclear plant components. *Eisenhower* was contracted for delivery to the Navy 21 months after *Nimitz*.

Originally it was planned to procure two more ships of this class (CVN 71 and 72). Long lead items for CVN 71 were requested under FY 1977 and $350 million were authorised. President Ford's request to cancel CVN 71 was backed by President Carter but Congress allowed $268·4 million of the original authorisation to stand, a sum already contractually agreed. The stipulation was made that this sum should be used for spare components for CVN 68/70 or for long lead items for CVN 71 should the Administration decide to go ahead with her. Advance procurement items for CVN 72 are to be requested in an amendment to the Carter FY 1982 programme and construction funds to be requested in FY 1983 programme.

Classification: *Nimitz* and *Eisenhower* were ordered as attack aircraft carriers (CVAN): reclassified CVN on 30 June 1975. First two ships will be refitted with A/S control centre and facilities for A/S aircraft and helicopters for their new multi-mission role (attack/ASW). *Vinson* and CVN 71 will be completed with these facilities.

Electronics: These ships have the Naval Tactical Data System (NTDS). All are or are to be fitted with OE-82 satellite communications antenna.

Endurance: 13 years for reactors, 16 days for aviation fuel (steady flying).

Engineering: These carriers have only two nuclear reactors compared with the eight reactors required for *Enterprise*. The nuclear cores for the reactors in these ships are expected to provide sufficient energy for the ships each to steam for at least 13 years, an estimated 800 000 to 1 million miles between refuelling.

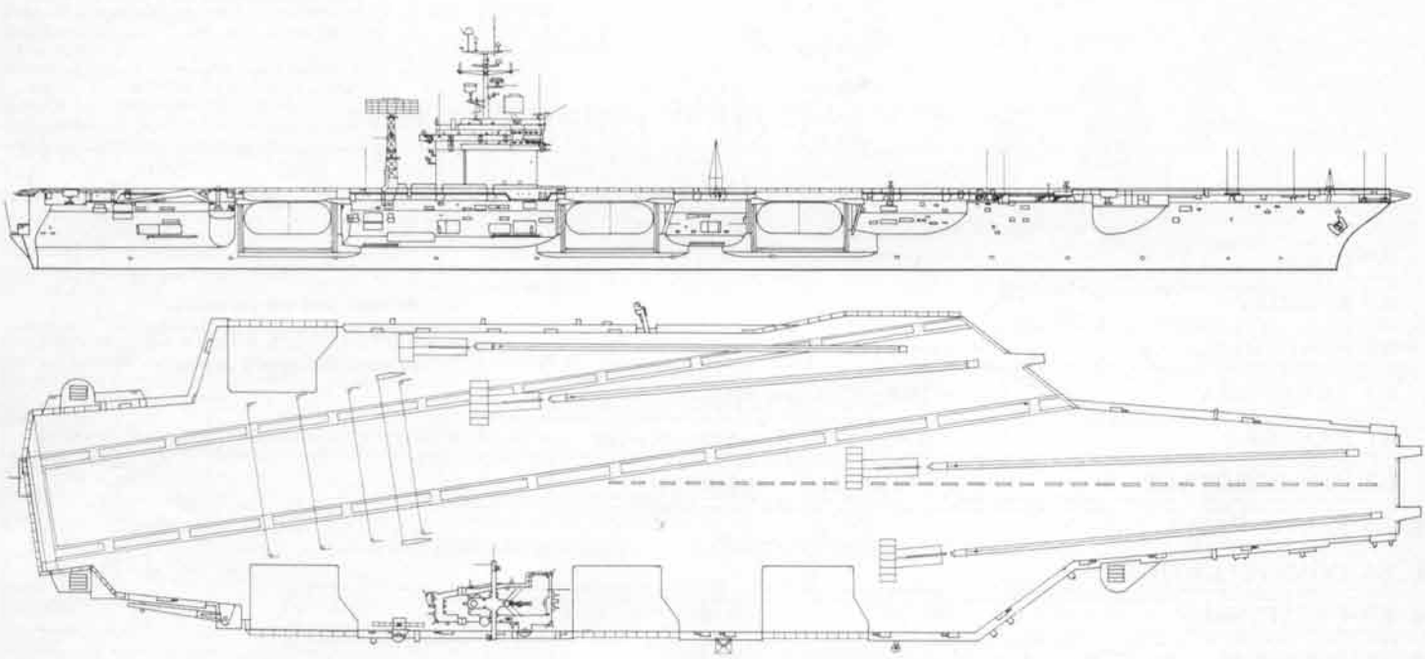
Fiscal: A number of cost growth factors have had an impact on these ships, including delays in schedule. The cost of *Nimitz* in FY 1976 dollars was equivalent to $1 881 million; the three later ships will cost in excess of $2 000 million each in equivalent dollars.

Gunnery: It is planned to add three 20 mm Mk 15 CIWS in *Nimitz* and *Eisenhower* which at present have only two 40 mm saluting guns. The second pair will be completed with four CIWS.

Missiles: *Nimitz* and *Eisenhower* will shortly receive Mk 29 Sea Sparrow in place of Mk 25.

Protection: Sides with system of full and empty compartments. Full compartments can contain aviation fuel. Approximately 2·5-in plating over certain areas of side shell. Box protection over magazine and machinery spaces.

Radar: 3D air search: SPS 48.
Air search: SPS 43A.
Surface search: SPS 10F.
Navigation: SPN 42, 43, 44 and LN-66.



NIMITZ

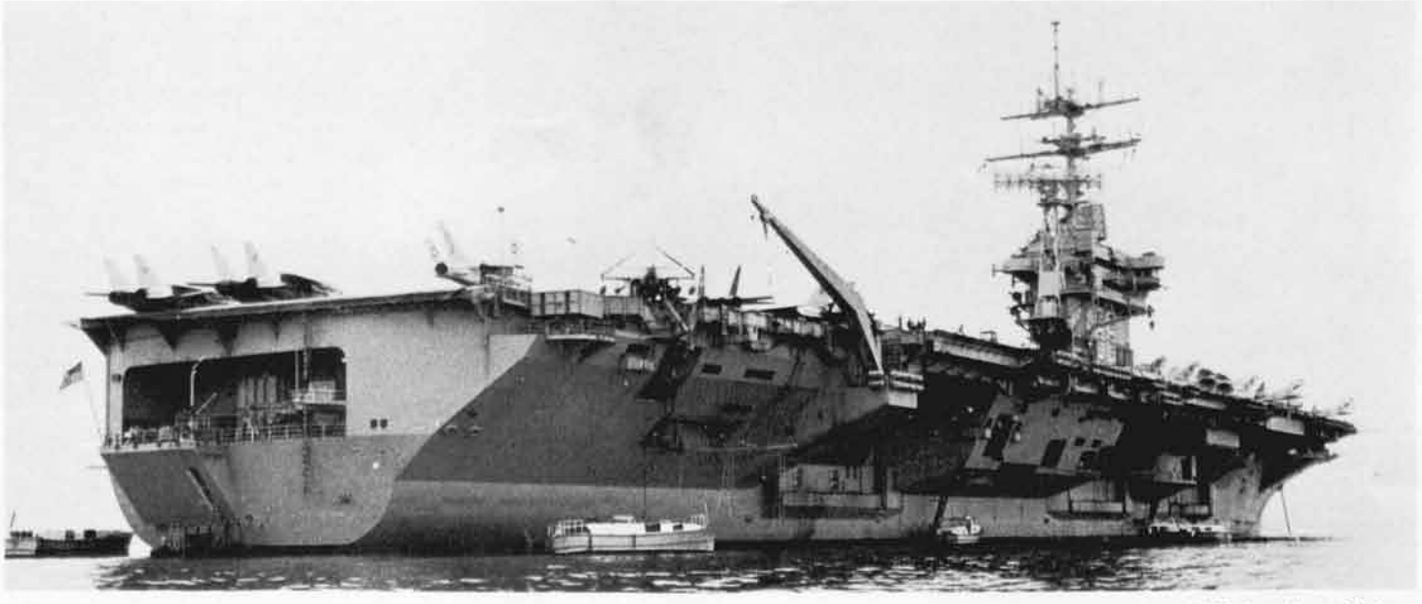
Drawing, A. D. Baker III

NIMITZ

9/1980, L. and L. van Ginderen

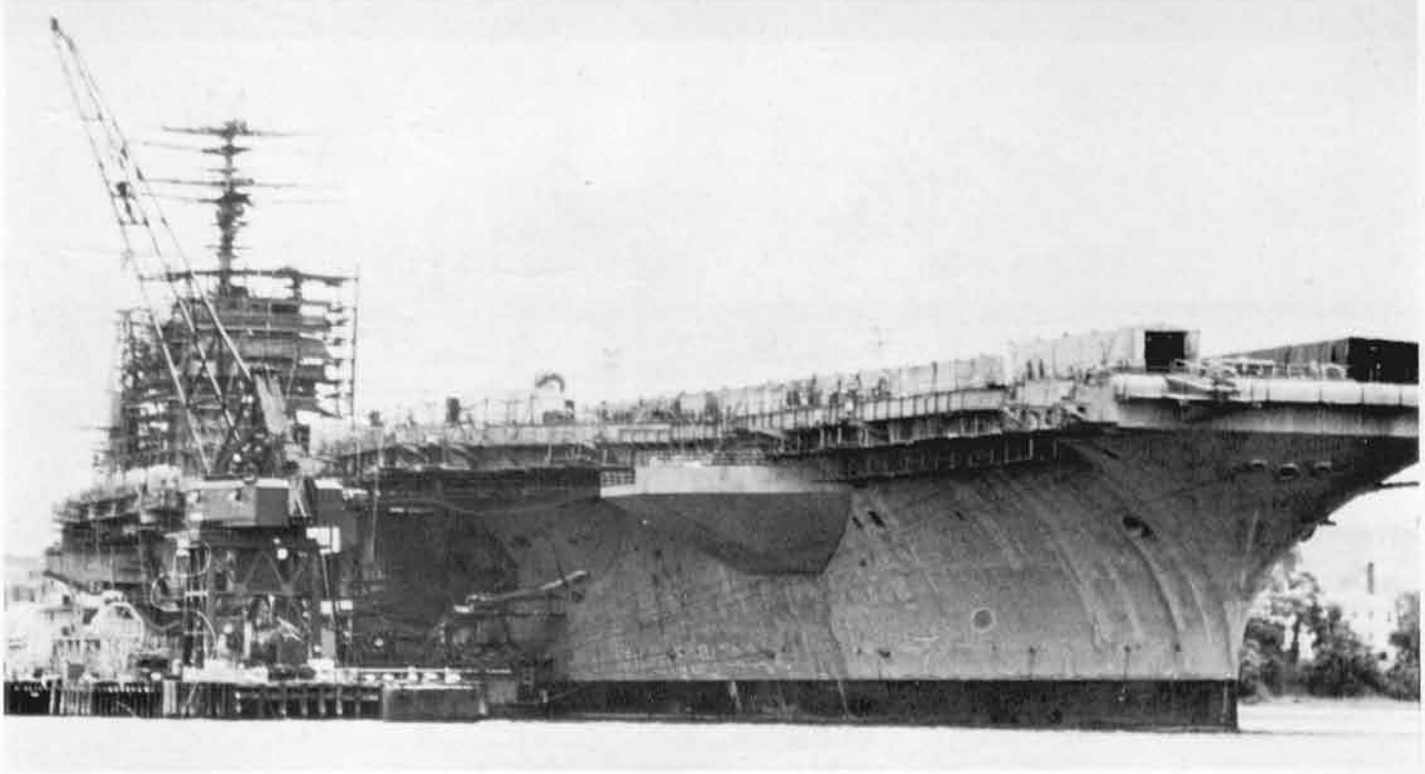
DWIGHT D. EISENHOWER

6/1979, L. and L. van Ginderen



NIMITZ

9/1980, L. and L. van Ginderen



CARL VINSON

8/1980, L. and L. van Ginderen

1 "ENTERPRISE" CLASS: MULTI-PURPOSE AIRCRAFT CARRIER (nuclear propulsion) (CVN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FIS*
ENTERPRISE	CVN 65	Newport News Shipbuilding & Dry Dock Co	4 Feb 1958	24 Sep 1960	25 Nov 1961	PA

Displacement, tons: 75 700 standard; 89 600 full load
Dimensions, feet (metres): 1 102 × 133 × 35·8
(335·9 × 40·5 × 10·9)
Flight deck width, feet (metres): 252 *(76·8)* maximum
Aircraft: Approx 84
Catapults: 4 steam (C 13)
Missiles: 3 NATO Sea Sparrow launchers (Mk 57)
Guns: 3 Phalanx Mk 15 CIWS systems; 2—40 mm Mk II saluting guns
Main engines: 4 geared steam turbines (Westinghouse); 280 000 shp; 4 shafts
Nuclear reactors: 8 pressurised-water cooled A2W (Westinghouse)
Speed, knots: Approx 35
Complement: 3 100 (162 officers, approx 2 940 enlisted men) plus 2 400 assigned to attack air wing for a total of 5 500

At the time of her construction, *Enterprise* was the largest warship ever built and is rivalled in size only by the nuclear-powered "Nimitz" class ships. *Enterprise* was authorised in the Fiscal Year 1958 new construction programme. She was launched only 31 months after her keel was laid down.
The cost of *Enterprise* was $451·3 million.
Currently undergoing a two year refit/overhaul at Puget Sound Naval S.Y., Bremerton, Washington. Completion July 1981. Cost $215 million.

Armament: *Enterprise* was completed without any armament in an effort to hold down construction costs. Space for Terrier missile system was provided. Mk 25 Sea Sparrow BPDMS subsequently was installed in late 1967 and this has been replaced by three Mk 57 and supplemented with three 20 mm Mk 15 CIWS during her refit.

Classification: Originally classified as CVAN; reclassified as CVN on 30 June 1975.

Design: Built to a modified "Forrestal" class design. Nuclear propulsion eliminated requirement for smoke stack and boiler air intakes.
A re-shaping of the island took place in her 1979-81 refit. This included the removal of the mast and dome (which carried obsolete ECM gear) which were replaced with a mast similar to that of the "Nimitz" class. The "billboards" of the SPS 32 and 33 radars were removed and replaced by the antennas of SPS 48C and 49 radars on the new mast.
Enterprise has four deck-edge lifts—two forward of the island and one on each side abaft the island.

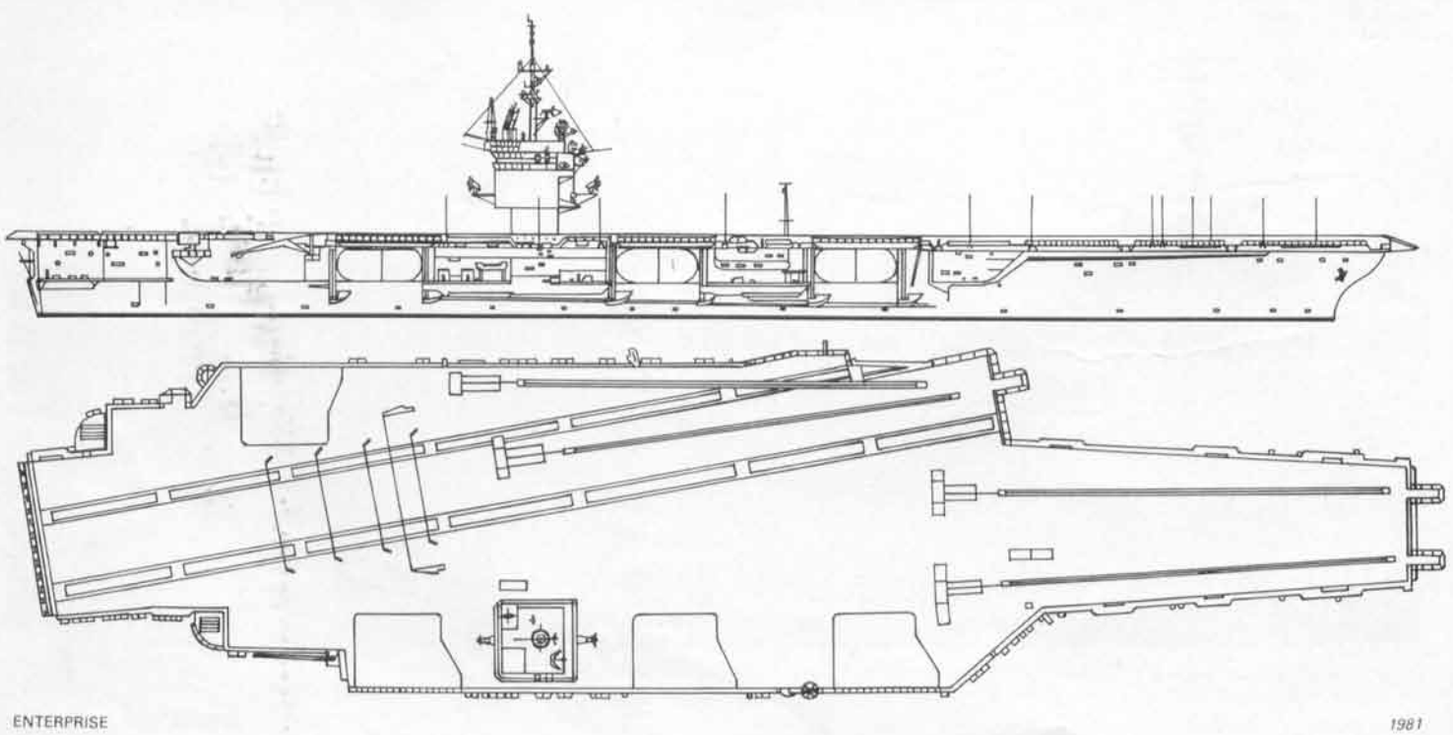
Electronics: Fitted with the Naval Tactical Data System (NTDS) and Tacan. Two Mk 115 missile FC systems replaced by three Mk 91 systems during 1979-81 overhaul. Fitted with OE-82 communications satellite antenna.

Engineering: *Enterprise* was the world's second nuclear-powered warship (the cruiser *Long Beach* was completed a few months earlier). Design of the first nuclear-powered aircraft carrier began in 1950 and work continued until 1953 when the programme was deferred pending further work on the submarine reactor programme. The large ship reactor project was reinstated in 1954 on the basis of technological advancements made in the previous 14 months. The Atomic Energy Commission's Bettis Atomic Power Laboratory was given prime responsibility for developing the nuclear power plant.
The first of the eight reactors installed in *Enterprise* achieved initial criticality on 2 December 1960, shortly after the carrier was launched. After three years of operation during which she steamed more than 207 000 miles, *Enterprise* was overhauled and refuelled from November 1964 to July 1965. Her second set of cores provided about 300 000 miles steaming. The eight cores initially installed in *Enterprise* cost $64 million; the second set cost about $20 million.
Enterprise underwent an extensive overhaul from October 1969-January 1971, which included installation of a new set of uranium cores in the ship's eight nuclear reactors. The overhaul and refuelling took place at the Newport News shipyard. Estimated cost of the overhaul was approximately $30 million, with $13 million being for non-nuclear repairs and alterations, and $17 million being associated with installation of the new nuclear cores (the latter amount being in addition to the $80 million cost of the eight cores). This third set of cores is expected to fuel the ship for 10 to 13 years.
There are two reactors for each of the ship's four shafts. The eight reactors feed 32 heat exchangers.

Radar: Air/surface search: SPS 48C, 49 and 65.
Low level search: SPS 58.
Search: SPS 10.

Rockets: One Mk 36 Chaffroc RBOC.

ENTERPRISE — *1980, USN*



ENTERPRISE — *1981*

4 "KITTY HAWK" and "JOHN F. KENNEDY" CLASSES: MULTI-PURPOSE AIRCRAFT CARRIERS (CV)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FIS*
KITTY HAWK	CV 63	New York Shipbuilding Corp, Camden, NJ	27 Dec 1956	21 May 1960	29 Apr 1961	PA
CONSTELLATION	CV 64	New York Naval Shipyard	14 Sep 1957	8 Oct 1960	27 Oct 1961	PA
AMERICA	CV 66	Newport News Shipbuilding & Dry Dock Co	9 Jan 1961	1 Feb 1964	23 Jan 1965	AA
JOHN F. KENNEDY	CV 67	Newport News Shipbuilding & Dry Dock Co	22 Oct 1964	27 May 1967	7 Sep 1968	AA

Displacement, tons:
Kitty Hawk: 60 100 standard; 80 800 full load
Constellation: 60 100 standard; 80 800 full load
America: 60 300 standard; 78 500 full load
John F. Kennedy: 61 000 standard; 82 000 full load
Length, feet (metres):
Kitty Hawk and *Constellation:* 1 046 *(318·8)*
America: 1 047·5 *(319·3)*
John F. Kennedy: 1 052 *(320·7)*
Beam, feet (metres): 130 *(39·6)*
Draught, feet (metres):
John F. Kennedy: 35·9 *(10·9)*
Remainder: 37 *(11·3)*
Flight deck width, feet (metres): 252 *(76·9)*
Catapults: 4 steam
Aircraft: Approx 85
Missiles: 2 twin Terrier surface-to-air launchers (Mk 10) in *Constellation,* (40 missiles per twin launcher)
3 Basic Point Defence Missile System (BPDMS) launchers (Mk 29) with NATO Sea Sparrow missiles in *John F. Kennedy*; two Mk 29 in *Kitty Hawk*
Guns: See note
Main engines: 4 geared turbines (Westinghouse) 280 000 shp; 4 shafts
Boilers: 8 (Foster-Wheeler)
Speed, knots: 30+
Complement: 2 800 (150 officers, approx 2 645 enlisted men) plus approx 2 150 assigned to attack air wing for a total of 4 950 officers and enlisted men per ship

These ships were built to an improved "Forrestal" design and are easily recognised by their island structure being set farther aft than the superstructure in the four "Forrestal" class ships. Lift arrangements also differ (see *Design* notes). *Kitty Hawk* was authorised in the FY 1956 new construction programme, *Constellation* in FY 1957, *America* in FY 1961, and *John F. Kennedy* in FY 1963. Completion of *Constellation* was delayed because of a fire which ravaged her in the New York Naval Shipyard in December 1960. Construction of *John F. Kennedy* was delayed because of debate over whether to provide her with conventional or nuclear propulsion.
The construction of a second "John F. Kennedy" class was an option for the new carrier in FY 1980 but Congress decided on CVN 71.

Appearance: *America* painted black between flight deck and bridge to mask jet exhaust stains. To be carried out in all of this class.

Classification: As completed, all four ships were classified as attack aircraft carriers (CVA); first two changed to multi-mission aircraft carriers (attack and anti-submarine) when modified with A/S command centres and facilities for S-3 Viking fixed-wing aircraft and SH-3 Sea King helicopters. *Kitty Hawk* from CVA to CV on 29 April 1973; *John F. Kennedy* from CVA to CV on 1 December 1974; *Constellation* and *America* from CVA to CV on 30 June 1975, prior to A/S modifications.

Design: They have two deck-edge lifts forward of the superstructure, a third lift aft of the structure, and the port-side lift on the after quarter. This arrangement considerably improves flight deck operations. Four C13 catapults (with one C13-1 in each of later ships). *John F. Kennedy* and *America* have stern anchors as well as bower anchors because of their planned bow sonar domes (see *Sonar* notes). All have a small radar mast abaft the island.

CONSTELLATION *7/1980, USN*

Electronics: All four ships of this class have highly sophisticated electronic equipment including the Naval Tactical Data System (NTDS). Tacan in all ships. Fitted with OE-82 satellite communications antenna.

Fire control: *Kitty Hawk:* Two Mk 91 MFCS for Mk 29 BPDMS.
Constellation: Four Mk 76 MFCS for Terrier.
John F. Kennedy: Three Mk 91 MFCS for Mk 29 BPDMS.
It is planned to replace Mk 76 system with Mk 91 in *Constellation.*

Fiscal: Construction costs were $265·2 million for *Kitty Hawk,* $264·5 million for *Constellation,* $248·8 million for *America,* and $277 million for *John F. Kennedy.*

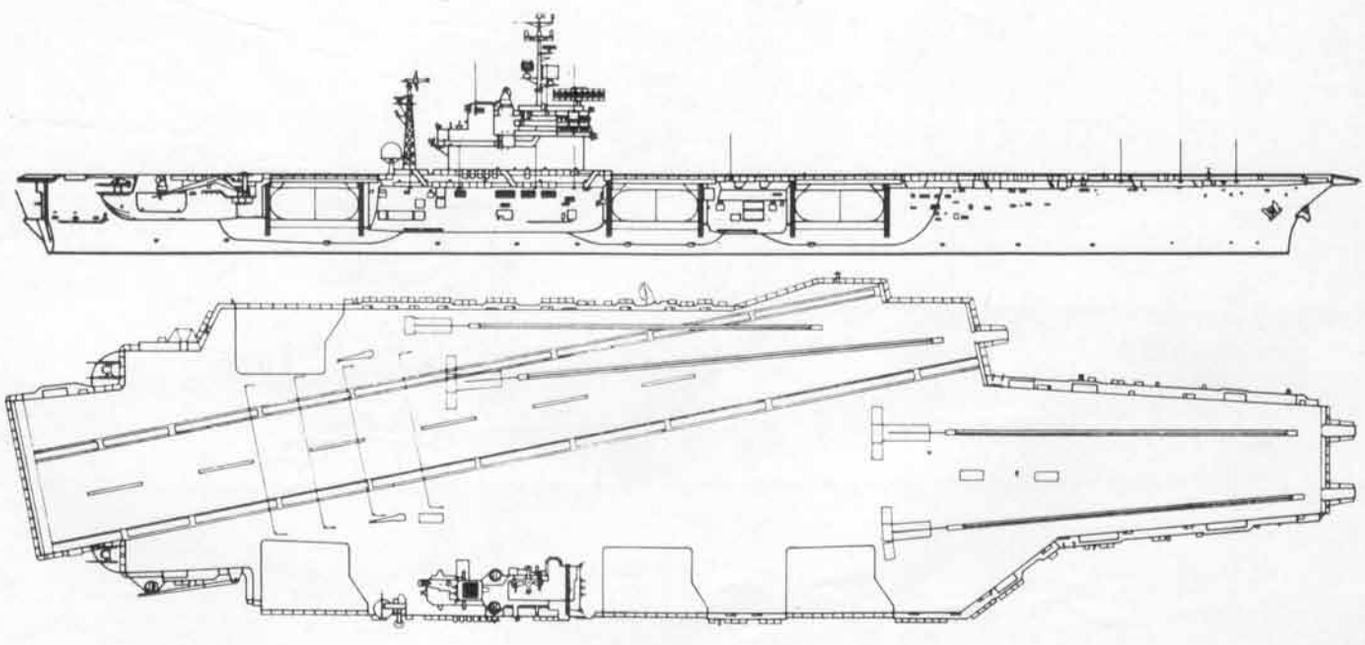
Gunnery: Planned to mount three 20 mm Mk 15 CIWS in each ship. Already mounted in *America* in 1980 and *John F. Kennedy.* Others currently have only 40 mm saluting guns (two in 63, 64 and 67, four in 66).

Missiles: *Constellation* has a Mk 10 Mod 3 launcher on the starboard quarter and a Mod 4 launcher on the port quarter. She has older Terrier HT systems which will be replaced by three NATO Sea Sparrow launchers (Mk 29).

Radar: 3D search: SPS 52 (3 ships).
Search: SPS 43.
Search: SPS 49 and 58 *(John F. Kennedy).*
Search: SPS 30 (remainder).

Rockets: Mk 28 Mod 5 rocket launching systems fitted in *America* and *John F. Kennedy.* All to receive Super-RBOC Mk 36.

Sonar: SQS 23 *(America* only).
This is the only US attack carrier so fitted, although it was planned also for *John F. Kennedy.*



AMERICA *Drawing by A. D. Baker III*

JOHN F. KENNEDY

3/1980, USN (PH2. A. Andrews)

AMERICA

10/1974, USN

KITTY HAWK

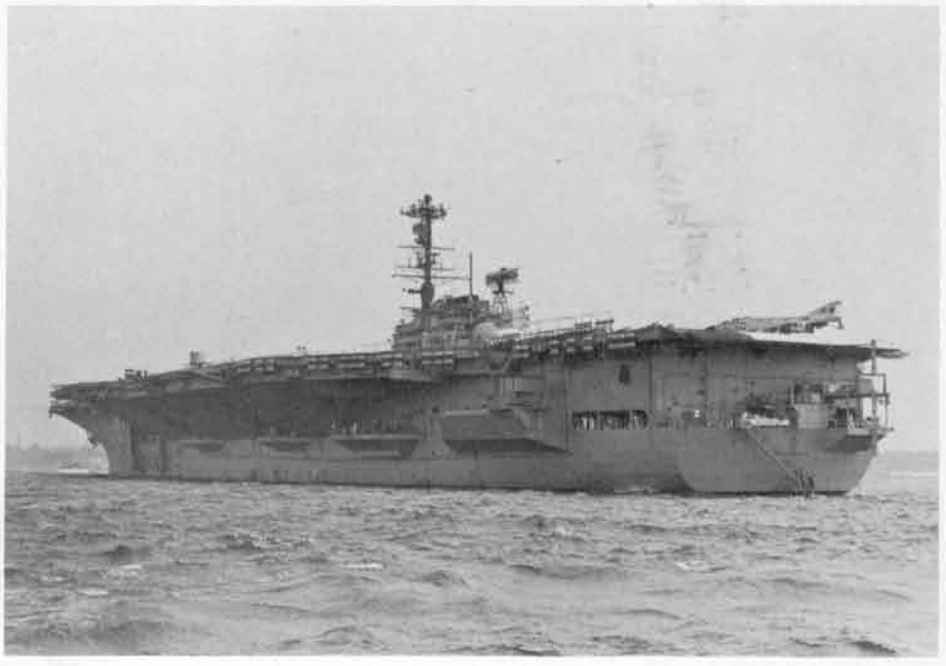
8/1979, Dr. Giorgio Arra

4 "FORRESTAL" CLASS: MULTI-PURPOSE AIRCRAFT CARRIERS (CV)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
FORRESTAL	CV 59	Newport News S.B. & D.D. Co	14 July 1952	11 Dec 1954	1 Oct 1955	AA
SARATOGA	CV 60	New York Naval Shipyard	16 Dec 1952	8 Oct 1955	14 Apr 1956	AR
RANGER	CV 61	Newport News S.B. & D.D. Co	2 Aug 1954	29 Sep 1956	10 Aug 1957	PA
INDEPENDENCE	CV 62	New York Naval Shipyard	1 July 1955	6 June 1958	10 Jan 1959	AA

Displacement, tons:
Forrestal and *Saratoga:* 59 060 standard; 75 900 full load
Others: 60 000 standard; 79 300 full load
Length, feet (metres):
Forrestal: 1 086 *(331)*
Saratoga: 1 063 *(324)*
Ranger: 1 071 *(326·4)*
Independence: 1 070 *(326·1)*
Beam, feet (metres): 129·5 *(39·5)*
Draught, feet (metres): 37 *(11·3)*
Flight deck width, feet (metres): 252 *(76·8)* maximum
Catapults: 4 steam (2—C7 and 2—C11 in 59 and 60; 4—C7 others)
Aircraft: Approx 70
Guns: 4—40 mm saluting guns
Missiles: 2 Basic Point Defence Missile Systems (BPDMS) launchers with Sea Sparrow missiles (see note)
Main engines: 4 geared turbines (Westinghouse) 4 shafts; 260 000 shp *(Forrestal)*; 280 000 shp (remainder)
Boilers: (Babcock & Wilcox)
Speed, knots:
Forrestal: 33
Others: 34
Oil fuel, tons: 7 800
Complement: 2 790 (145 officers, approx 2 645 enlisted men) plus approx 2 150 assigned to attack air wing for a total of 4 940+ per ship

Forrestal was the world's first aircraft carrier built after World War II. The *Forrestal* design drew heavily from the aircraft carrier *United States* (CVA 58) which was cancelled immediately after being laid down in April 1949. *Forrestal* was authorised in the FY 1952 new construction programme; *Saratoga* followed in the FY 1953 programme, *Ranger* in the FY 1954 programme, and *Independence* in the FY 1955 programme.



FORRESTAL 7/1976, A. D. Baker III

Appearance: Funnel height of *Forrestal* and *Independence* increased by 10 ft in 1980.

Classification: *Forrestal* and *Saratoga* were initially classified as Large Aircraft Carriers (CVB); reclassified as Attack Aircraft Carriers (CVA) on 1 October 1952 to reflect their purpose rather than size.
Saratoga redesignated CV on 30 June 1972; *Independence* on 28 Feb 1973; *Forrestal* and *Ranger* on 30 June 1975.

Design: The "Forrestal" class ships were the first aircraft carriers designed and built specifically to operate jet-propelled aircraft. *Forrestal* was redesigned early in construction to incorporate British-developed angled flight deck and steam catapults. These were the first US aircraft carriers built with an enclosed bow area to improve seaworthiness. Other features include armoured flight deck and advanced underwater protection and internal compartmentation to reduce effects of conventional and nuclear attack. Mast configurations differ; *Forrestal* originally had two masts, one of which was removed in 1967.

Electronics: Naval Tactical Data System (NTDS); Tacan. Fitted with OE-82 satellite communications antenna.

Elevators: Four 72 × 50 ft *(21·9 × 15·2 m)* with capacity of 99 000 lbs (45 tonnes).

Engineering: *Saratoga* and later ships have an improved steam plant; increased machinery weight of the improved plant is more than compensated for by increased performance and decreased fuel consumption. *Forrestal* boilers are 615 psi *(42·7 kg/cm²)*; 1 200 psi *(83·4 kg/cm²)* in other ships.
Four 5-bladed propellers of 21 ft diameter.

Fiscal: Construction costs were $188·9 million for *Forrestal*, $213·9 million for *Saratoga*, $173·3 million for *Ranger*, and $225·3 million for *Independence*.

Gunnery: All four ships initially mounted eight 5-in guns (Mk 42) in single mounts, two on each quarter and two on each bow. The forward sponsons carrying the guns interfered with ship operations in rough weather, tending to slow the ships down. The forward sponsons and guns were subsequently removed (except in *Ranger*), reducing armament to four guns per ship. The after guns were removed with installation of BPDMS launchers (see below). *Ranger*'s remaining 5-in guns removed in 1976. Each ship carries four 40 mm saluting guns. It is planned to fit all these ships with three 20 mm Mk 16 CIWS during SLEP overhauls.

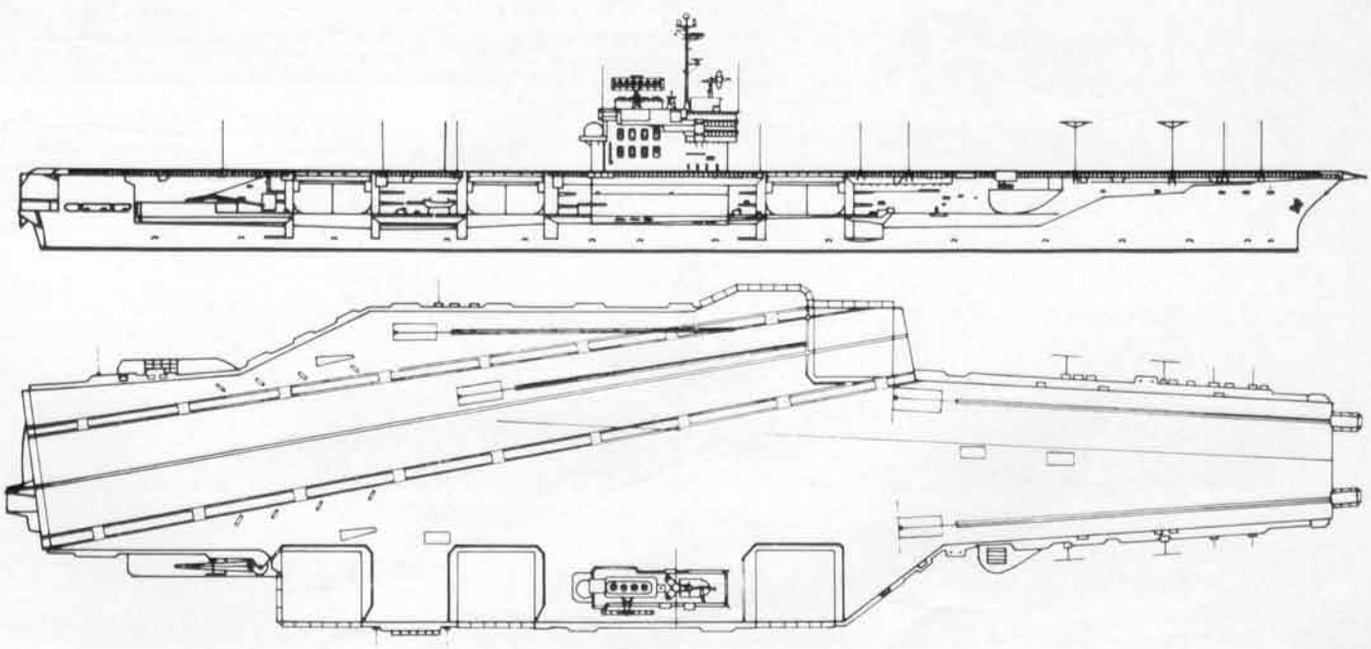
Missiles: The four after 5-in guns were removed from *Forrestal* late in 1967 and a single BPDMS launcher for Sea Sparrow missiles was installed forward on the starboard side. Two Mk 25 BPDMS launchers fitted in *Independence* in 1973; *Saratoga* in 1974; *Forrestal* in 1976. These have been replaced by Mk 29 BPDMS launchers in *Ranger* and *Independence*.

Forrestal and *Saratoga* fitted with two Mk 115 Mod 0 MFCS to be replaced by Mk 91 Mod 3. *Ranger* and *Independence* fitted with two Mk 91 Mod 1 MFCS.

Radar: Low angle air search: SPS 58.
Search: SPS 30 and 43 (*Saratoga* —to be replaced by SPS 48 and 49 during SLEP); SPS 48 and 49 in remainder.
Navigation: SPN 10.

Rockets: One Mk 28 rocket launching system fitted in all but *Ranger*. Mk 36 Chaffroc RBOC to be fitted in all ships.

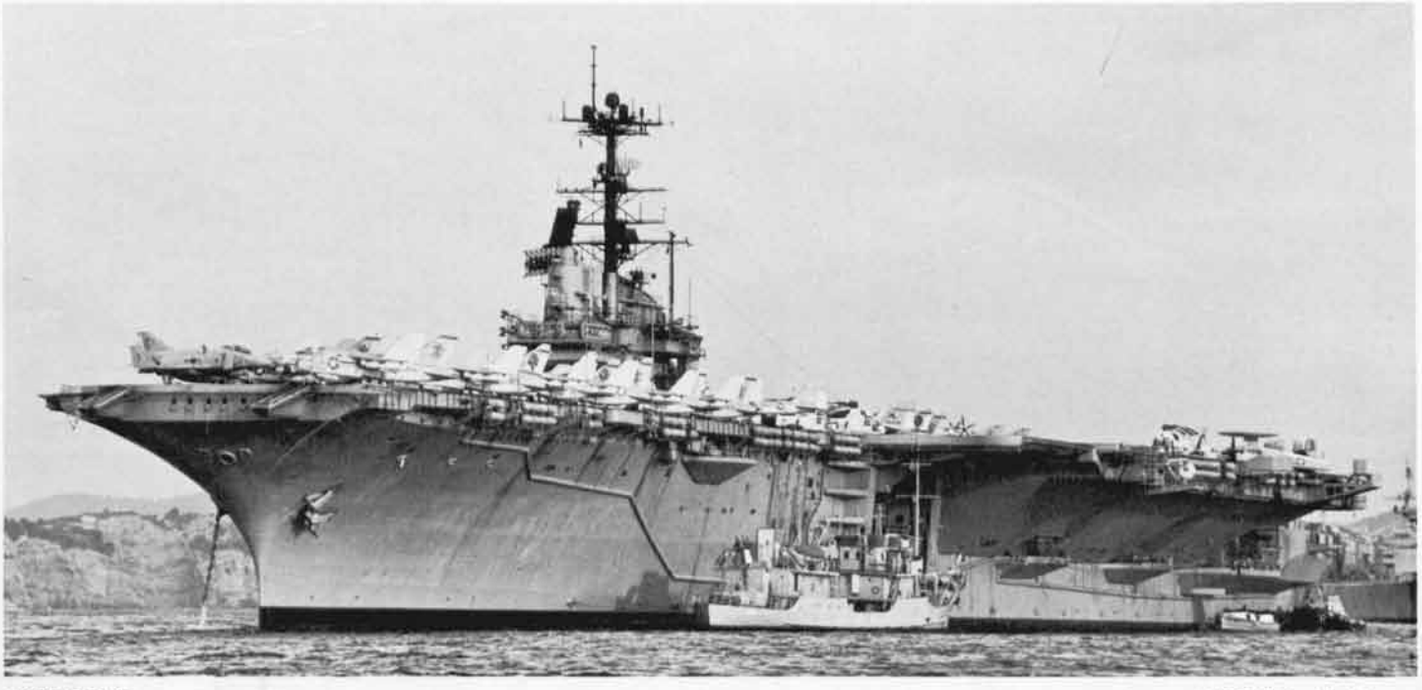
Service Life Extension Programme (SLEP): Owing to current building costs this programme is intended to extend carriers' lives from 30 to 45 years. The "Forrestal" class will be the first to undergo this modernisation—*Saratoga* from 1 October 1980-3 February 1983; *Forrestal* from 1 January 1983-1 May 1985; *Independence* from 1 April 1985-1 August 1987; *Ranger* from 1 July 1987-1 November 1989.
Each modernisation will last 28 months and include extensive re-cabling and renovation. Cost approx $515·4 million for *Saratoga* (FY 1981 dollars). $32·2 million advance funding approved in FY 1979 for first SLEP. Protests at this choice from Newport News resulted in Congress deciding to make their own decision and finally approved Philadelphia in late 1979. *Saratoga* decommissioned 1 October 1980 and entered the Navy Yard to begin her SLEP. In FY 1981 dollars this will cost about 40 per cent of the building price of a large-deck carrier. *Forrestal* will cost approx $582·7 million (FY 1981 dollars).



FORRESTAL Drawing, A. D. Baker III

FORRESTAL

6/1978, USN (PH2. J. Sharp)



INDEPENDENCE

11/1979, Michael D. J. Lennon

RANGER

7/1979, Dr. Giorgio Arra

2 "MIDWAY" CLASS: MULTI-PURPOSE AIRCRAFT CARRIERS (CV)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FiS*
MIDWAY	CV 41	Newport News S.B. & D.D. Co	27 Oct 1943	20 Mar 1945	10 Sep 1945	PA
CORAL SEA	CV 43	Newport News S.B. & D.D. Co	10 July 1944	2 Apr 1946	1 Oct 1947	PA

Displacement, tons: *Midway:* 51 000 standard; *Coral Sea:* 52 500 standard; 62 200 full load
Dimensions, feet (metres): 979 × 121 × 35·3 *(298·4 × 36·9 × 10·8)*
Flight deck width, feet (metres): 238 *(72·5)* maximum
Catapults: 2 steam in *Midway* (C 13); 3 in *Coral Sea* (C 11)
Aircraft: Approx 75
Missiles: See note
Guns: See notes
Main engines: 4 geared turbines (Westinghouse); 212 000 shp; 4 shafts
Boilers: 12 (Babcock & Wilcox)
Speed, knots: 30+
Complement: *Midway* 2 615 (140 officers, approx 2 475 enlisted men); *Coral Sea* 2 710 (165 officers, approx 2 545 enlisted men) plus approx 1 800 assigned to air wing

The original three carriers of this class were the largest US warships constructed during World War II.
Midway was homeported at Yokosuka, Japan, in October 1973; she is the only US aircraft carrier to be based overseas.
Coral Sea is currently active but has no regular air wing and is used for contingencies. *Coral Sea* made regular deployments to the Indian Ocean beginning November 1979 while *Enterprise* was in overhaul.

Classification: These ships were initially classified as Large Aircraft Carriers (CVB); reclassified as Attack Aircraft Carriers (CVA) on 1 October 1952. Both ships reclassified as Aircraft Carriers (CV) on 30 June 1975.

Design: These ships were built to the same design with a standard displacement of 45 000 tons, full load displacement of 60 100 tons, and an overall length of 968 feet. They have been extensively modified since completion (see *Modernisation* note). These ships were the first US aircraft carriers with an armoured flight deck and the first US warships with a designed width too large to enable them to pass through the Panama Canal.

Electronics: Naval Tactical Data System (NTDS); Tacan.
Fitted with OE-82 satellite communications antenna.

Fiscal: Construction cost of *Midway* was $85·6 million and *Coral Sea* $87·6 million.

Gunnery: As built, these ships mounted 18 5-in guns (14 in *Coral Sea*), 84—40 mm guns, and 28—20 mm guns. In 1978 the last 5-in guns were removed.
Coral Sea fitted with three 20 mm Mk 15 CIWS in 1980. *Midway* to receive same fit in 1981.
Both ships carry two 40 mm saluting guns.

Missiles: *Midway* is to be fitted with two Mk 25 Sea Sparrow launchers (BPDMS) in near future as well as two Mk 115 Missile FC systems.

Modernisation: Extensively modernised. Their main conversion (*Midway* 1955-57 and *Coral Sea* 1958-60) gave them angled flight decks, steam catapults, enclosed bows, new electronics, and new lift arrangement. Both now have one lift forward and one aft of island on starboard side and third lift outboard on port side aft.
Midway's 1966-70 modernisation included widening the flight deck, provisions for handling newer aircraft, new catapults, new lifts and new electronics.
Midway is now the more capable of the two ships. *Coral Sea* had an extensive refit in 1979.

Radar: Low angle air search: SPS 58.
Search: SPS 10, 30 and 43.
Navigation: SPN 6 and 10.
During a regular scheduled maintenance period at Yokosuka, Japan, in spring 1979, *Midway* was fitted with an extension measuring 64 × 30 ft *(19·5 × 9·1 m)* added on the after end of the superstructure to provide space for the associated equipment of the SPS 48C long range air search radar system. On the after end of the extension was added a 34 ft *(10·4 m)* high lattice mast on top of which will be added the 22 ft *(6·7 m)* high SPS 48 antenna. Below the top of the mast and above the extension are two platforms on the mast each of which has an SPN 42 radar antenna mounted on the after end. The SPN 42 system is associated with the Automatic Carrier Landing System (ACLS).

CORAL SEA

2/1980, USN (PHAN. C. Fargo)

MIDWAY

1979, Dr. Giorgio Arra

MIDWAY

8/1979, Dr. Giorgio Arra

4 "HANCOCK" and "INTREPID" CLASSES: AIRCRAFT CARRIERS (1 CVA, 1 CV, 1 CVS, 1 AVT)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
LEXINGTON	AVT 16	Bethlehem Steel Co, Quincy, Mass	15 July 1941	26 Sep 1942	17 Feb 1943	AA
BON HOMME RICHARD	CVA 31	New York Navy Yard	1 Feb 1943	29 Apr 1944	26 Nov 1944	PR
ORISKANY	CV 34	New York Navy Yard	1 May 1944	13 Oct 1945	25 Sep 1950	PR
SHANGRI-LA	CVS 38	Norfolk Navy Yard	15 Jan 1943	24 Feb 1944	15 Sep 1944	AR

Displacement, tons: 29 600 light; 41 900 full load.
(*Oriskany* 28 200 light; 40 600 full load)
Length, feet (metres): 899 *(274)* oa (889 *(270·9)*
(Shangri-La, Lexington)
Beam, feet (metres): 103 *(31·4)* except *Oriskany* 106·5 *(32·5)*
Draught, feet (metres): 31 *(9·5)*
Flight deck width, feet (metres): 172 *(52·4)* except
Lexington 192 *(58·5)* and *Oriskany* 195 *(59·5)*
Catapults: 2 steam
Aircraft: 70 to 80 for CVA/CV type; approx 45 for CVS type; none assigned to *Lexington*
Guns: 2—5 in *(127 mm)*/38 (single Mk 24) in *Oriskany*; 4 guns in other ships except all removed from *Lexington*
Main engines: 4 geared turbines (Westinghouse) 150 000 shp; 4 shafts
Boilers: 8 (Babcock & Wilcox)
Speed, knots: 30+
Complement: CVA/CV type: 2 090 (110 officers, 1 980 enlisted men); plus approx 1 185 (135 officers, 1 050 enlisted men) in air wing for a total of approx 3 200 per ship
CVS type: 1 615 (115 officers, approx 1 500 enlisted men) plus approx 800 assigned to ASW air group for a total of 2 400
Lexington: 1 440 (75 officers, 1 365 enlisted men); no air unit assigned

LEXINGTON *1/1977, USN (JO1. S. Auld)*

ORISKANY *8/1970, USN*

These ships (formerly six including *Hancock* and *Intrepid*) originally were "Essex" class aircraft carriers; extensively modernised during 1950s, being provided with enclosed bow, angled flight deck, improved elevators, increased aviation fuel storage, and steam catapults. Construction of *Oriskany* suspended after World War II and she was completed in 1950 to a modified "Essex" design.
Bon Homme Richard decommissioned on 2 July 1971, *Shangri-La* on 30 July 1971, *Oriskany* on 30 September 1976; *Lexington* will remain in commission as a training carrier (with no aircraft support capability) for some time. She was originally scheduled for deletion in FY 1979 but was overhauled in FY 1980 by Congressional order. Scheduled for next overhaul in FY 1985.
Of the surviving ships of these two classes, *Oriskany* is the most capable and in the best material condition. During the FY 1981 budget passage through Congress, both Houses authorised the reactivation of *Oriskany*. However, only the House added money ($294 million) to the budget. The Senate, by a narrow margin, voted down the money. In a Senate/House of Representatives Conference committee, reactivation of *Oriskany* was deleted entirely from the FY 1981 budget. In an amendment to the Carter Administration's FY 1982 budget request, the Reagan Administration requested $500 million to reactivate *Oriskany* within three years. Manning level would be about 3 200 men. To bring *Oriskany* out and get her in shape to steam would cost about $170 million. This would enable her to operate for four or five years when she would need a major overhaul. The air wing would consist of A-7s, A-4s and F-8s and, perhaps, some AV-8A Harriers. If a second carrier is reactivated, *Bon Homme Richard* would be the next carrier to be employed.

Classification: All "Essex" class ships originally were designated as Aircraft Carriers (CV); reclassified as Attack Aircraft Carriers (CVA) on 1 Oct 1952. *Lexington* reclassified as ASW Support Carrier (CVS) on 1 October 1962, *Shangri-La* on 30 June 1969. *Lexington* became the Navy's training aircraft carrier in the Gulf of Mexico on 29 December 1962; reclassified CVT on 1 January 1969 and AVT on 1 July 1978.
Oriskany redesignated as CV on 30 June 1975.

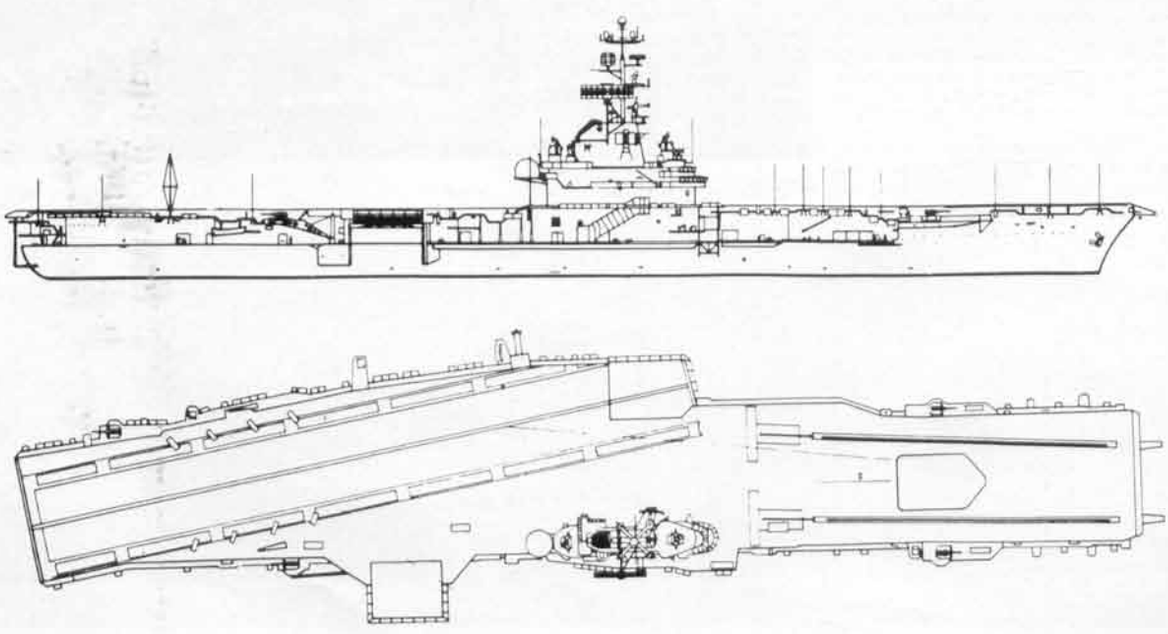
Electronics: *Oriskany* conducted the initial sea trials of the Naval Tactical Data System (NTDS) in 1961-62; Tacan.

Fire control: Fitted with one Mk 37 gunfire control system and two Mk 56 GFCS except *Oriskany* with two Mk 37 GFCS.

Modernisation: These ships have been modernised under several programmes to increase their ability to operate more-advanced aircraft. *Oriskany* was originally completed with some post-war features incorporated. The most prominent difference from their original configuration is angled flight deck and removal of twin 5-in gun mounts from flight deck forward and aft of island structure. Three elevators fitted; "Pointed" centreline lift forward between catapults, deckedge lift on port side at leading edge of angled deck, and deckedge lift on starboard side aft of island structure. Minimal gun battery retained. Remaining guns removed from *Lexington* in 1969; by 1975 *Oriskany* had only two 5-in guns fitted.

Protection: As originally designed; 2·5-4 in side belt, 2·5-3 in hangar deck; 1·5-in flight deck and main deck.

Radar: Search: SPS 10, 30 and 43.
Navigation: SPN 10.
Lexington:
Search: SPS 10, 12 and 43.
Navigation: SPN 10.



ORISKANY *Drawing, A. D. Baker III*

2 MODERNISED "ESSEX" CLASS: ASW AIRCRAFT CARRIERS (CVS)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FIS*
HORNET	CVS 12	Newport News Shipbuilding & Dry Dock Co	3 Aug 1942	29 Aug 1943	29 Nov 1943	PR
BENNINGTON	CVS 20	New York Navy Yard	15 Dec 1942	26 Feb 1944	6 Aug 1944	PR

Displacement, tons: 33 000 standard; 40 600 full load
Dimensions, feet (metres): 899 × 101 × 31 *(274 × 30·7 × 9·4)*
Flight deck width, feet (metres): 172 *(52·4)*
Catapults: 2 hydraulic (H-8)
Aircraft: 45 (including 16 to 18 helicopters)
Guns: 4—5 in *(127 mm)*/38 (single Mk 24)
Main engines: 4 geared turbines (Westinghouse); 150 000 shp; 4 shafts
Boilers: 8 (Babcock & Wilcox)
Speed, knots: 30+
Complement: 1 615 (115 officers, approx 1 500 enlisted men) plus approx 800 assigned to ASW air group for a total of 2 400 per ship

The two above ships and the previously listed "Hancock" and "Intrepid" classes are the survivors of the 24 "Essex" class fleet carriers laid down during World War II. Both of the above ships were extensively modernised during the 1950s; however, they lack the steam catapults and other features of the "Hancock" and "Intrepid" classes.
Bennington was decommissioned on 15 January 1970 and *Hornet* on 26 June 1970. Both laid up at Bremerton, Wash.

Classification: These ships originally were designated as Aircraft Carriers (CV); reclassified as Attack Carriers (CVA) on 1 October 1952. Subsequently they became ASW Support Aircraft Carriers (CVS): *Hornet* on 27 June 1958, and *Bennington* on 30 June 1959.

Design: All 24 "Essex" class ships were built to the same basic design except for the delayed *Oriskany*. Standard displacement as built was 27 100 tons, full load displacement was 36 380 tons, and overall length 888 or 872 ft.

Fire control: One Mk 37 and three Mk 56 GFCS.

Modernisation: These ships have been modernised under several programmes to increase their ability to operate advanced aircraft and to improve sea keeping. Also modernised to improve anti-submarine capabilities under the Fleet Rehabilitation and Modernisation (FRAM II) programme.

Radar: Search: SPS 10, 30 and 43; Tacan.

Sonar: SQS 23 (bow-mounted).

BENNINGTON (starboard lift raised during replenishment) *1968, USN*

HORNET *1968, USN*

BATTLESHIPS

4 "IOWA" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
IOWA	BB 61	New York Navy Yard	27 June 1940	27 Aug 1942	22 Feb 1943	AR
NEW JERSEY	BB 62	Philadelphia Navy Yard	16 Sep 1940	7 Dec 1942	23 May 1943	PR
MISSOURI	BB 63	New York Navy Yard	6 Jan 1941	29 Jan 1944	11 June 1944	PR
WISCONSIN	BB 64	Philadelphia Navy Yard	25 Jan 1941	7 Dec 1943	16 Apr 1944	AR

Displacement, tons: 45 000 standard; 58 000 full load
Dimensions, feet (metres): 887·2 × 108·2 × 38
(270·4 × 33 × 11·6)
(New Jersey length 887·6 *(270·5))*
Guns: 9—16 in *(406 mm)*/50 (triple); 20—5 in *(127 mm)*/38 (twin Mk 38); 20—40 mm/60 in *Missouri* only
Main engines: 4 geared turbines (General Electric in BB 61 and BB 63; Westinghouse in BB 62 and BB 64); 212 000 shp; 4 shafts
Boilers: 8 (Babcock & Wilcox)
Speed, knots: 33 (all may have reached 35 knots in service)
Oil fuel, tons: 9 000
Range, miles: 5 000 at 30 knots; 15 000 at 17 knots
Complement: Designed complement varied, averaging 95 officers and 2 270 enlisted men in wartime; *New Jersey* was manned by 70 officers and 1 556 enlisted men (requirements reduced with removal of all light anti-aircraft weapons, floatplanes, and reduced operational requirements) in 1968-69.

These ships were the largest battleships ever built except for the Japanese *Yamato* and *Musashi* (64 170 tons standard, 863 ft overall, nine 18·1-in guns). All four "Iowa" class ships were in action in the Pacific during World War II, primarily screening fast carriers and bombarding amphibious invasion objectives. Three were "mothballed" after the war with *Missouri* being retained in service as a training ship. All four ships again were in service during the Korean War (1950-53) as shore-bombardment ships; all "mothballed" 1954-58.
New Jersey began reactivation in mid-1967 at a cost of approximately $21 million; recommissioned on 6 April 1968. *Iowa* and *Wisconsin* remained in reserve at the Philadelphia Naval Shipyard where *New Jersey* had been berthed and reactivated; and the "mothballed" *Missouri* at the Puget Sound NAVAL Shipyard, Bremerton, Washington.
New Jersey was again decommissioned on 17 December 1969 and mothballed at Bremerton with *Missouri*.
Approximate construction cost was $114·485 million for *Missouri*; other ships cost slightly less.

Aircraft: As built, each ship carried three floatplanes for scouting and gunfire spotting and had two quarterdeck catapults. Catapults removed and helicopters carried during the Korean War.

Armour: The main armour belt consists of Class A steel armour 12·1-in thick tapering vertically to 1·62-in; a lower armour belt aft of Turret No. 3 to protect propeller shafts is 13·5-in; turret faces are 17-in; turret tops are 7·25-in; turret backs are 12-in; barbettes have a maximum of 11·6-in of armour; second deck armour is 6-in; and the three-level conning tower sides are 17·3-in with an armoured roof 7·25-in (the conning tower levels are pilot house navigation bridge and flag-signal bridge).

Design: These ships carry heavier armament than previous US battleships and have increased protection and larger engines accounting for additional displacement and increased speed. All fitted as fleet flagships with additional accommodations and bridge level for admiral and staff. When *New Jersey* was reactivated in 1967-68 this accommodation remained mothballed.

Future: In early 1980 the lack of suitable fleet flagships and the need to bolster the fleet, caused the House of Representatives to add $304 million, to the FY 1981 budget authorisation package. The Senate agreed to this; thus *New Jersey* was authorised for reactivation. However, when it came to appropriating the money, the Senate failed to support the request.
On 10 March 1981 the Reagan Administration submitted an amendment to the FY 1982 Shipbuilding programme of the Carter Administration. The amendment requests $92 million to begin reactivation of *New Jersey* with an additional $162 million to be requested in the FY 1983 budget for further modernisation and reactivation. The amendment also requests funds to begin reactivation of *Iowa*. Funds are also being requested to undertake a feasibility study to see if it is economically possible to bring *Wisconsin* and *Missouri* back into service. It is estimated that it will take about two and a half years to make *New Jersey* operational and three years to make *Iowa* operational. Current estimates are that it will cost about $13 million a year to keep each ship operational once it is recommissioned. Plans call for each ship having the same manning level as *New Jersey* did in her Viet-Nam service. The Navy feels that it will have no problems in manning these ships as retention rates have been improving with the recent passage of improved benefits and pay raises.

Operational: *New Jersey* made one deployment to the Western Pacific during her third commission (1968-69).

Radar: SPS 6 and 10 (fitted in *New Jersey* 1968-69).

NEW JERSEY (off Viet-Nam) *4/1969, USN*

WISCONSIN *USN*

CRUISERS

The US Navy's active cruiser force consists of 27 guided missile ships. Only six of these ships (all nuclear-powered) have been completed during the past five years with *Albany* and *Chicago* being modernised World War II cruisers. All of these ships are oriented primarily toward Anti-Air Warfare (AAW) with the two older ships additionally configured to serve as flagships for the US Navy's numbered fleets.

With nine nuclear cruisers available in 1981 the Navy could operate two all-nuclear carrier task forces.

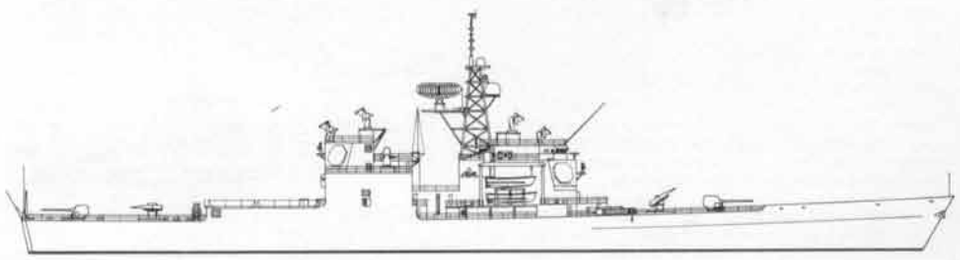
On 22 February 1977 Secretary of Defense Harold Brown announced the cancellation of the nuclear strike cruiser (CSGN) programme preferring the option of two DDG 47, now CG 47, Aegis-equipped destroyers for the price of one CSGN. In January 1979 the construction of the four "Modified Virginia" class CGNs was cancelled. They were originally designed to replace the CSGN programme but, according to official sources the construction of the class was "overtaken by events." (Details of the proposed CSGN are in *Jane's Fighting Ships* 1976-77).

On 1st January 1980 the new "DDG 47" class was rerated as Guided Missile Cruiser (CG) and DDG 47 and 48 were reclassified CG 47 and 48. This action reflects the fact that, although the hull of this class is the same as that of the "Spruance" class the "CG 47" class has a full load displacement 1 245 tons greater as well as a much heavier armament.

4 "MODIFIED VIRGINIA" CLASS GUIDED MISSILE CRUISERS (nuclear propulsion) (CGN)

No.	*Commission*
CGN 42	Est 1987
CGN 43	Est 1989
CGN 44	Est 1990
CGN 45	Est 1991

Displacement, tons: 12 000 full load
Dimensions, feet (metres): 589 × 63 × 24 *(179·6 × 19·2 × 7·3)*
Helicopters: approx 2
Missiles: approx 2 combination twin Tartar D/ASROC launchers (Mk 26) firing Standard MR surface-to-air missiles
Guns: 2—5 in *(127 mm)*/54 (Mk 45) single; 2—20 mm Mk 15 CIWS; 2—40 mm (saluting)
A/S weapons: (approx) ASROC (see *Missiles* above); 2 triple Mk 32 torpedo tubes firing Mk 46 torpedoes
Main engines: 2 geared turbines; 2 shafts
Reactors: 2 pressurised-water cooled D2W (Westinghouse)
Speed, knots: 30+
Complement: 634 (52 officers, 582 enlisted men)



CGN 42 (Provisional) *Drawing, A. D. Baker III*

The "Modified Virginia" class was to be built in place of the eight Nuclear Strike Cruisers (CSGN) proposed by the Ford Administration in late 1976. CGN 42 was originally to be the fifth unit of the "Virginia" class, but was cancelled in the FY 1976. Construction of this class was originally cancelled in January 1979. However with the arrival of the Reagan Administration, an amendment to the Carter Administration's 1982 Shipbuilding programme was submitted reinstating this class to the construction programme with long term lead items being funded in the FY 1982 budget request. Exact fiscal funding data is not available.

Design: To save on design and research and development costs this class is using the same basic design as the "Virginia" class (CGN 38/41). The major difference is that the existing design has been modified to accommodate the AEGIS system. Another difference between this class and the "Virginia" class is that this class employs the latest electronic, fire control and weapons systems.

Electronics: Fitted with Naval Tactical Data Systems (NTDS).

Fire control: Estimated to be Mk 74 missile control directors and digital Mk 116 ASW FCS. Will carry the AEGIS/SPY 1 system with UYK 7 computers to control radar.

Fiscal: In the original programme the initial ship would have cost $1 082 million dollars with costs decreasing to between $840 million and $1 000 million dollars for the follow on ships.

Gunnery: Mk 86 gunfire control directors.

Missiles: Magazines will carry a mixed Standard MR/ASROC load for each launcher. Harpoon SSM will be fitted during construction.

Radar: Data not available.

Sonar: Probably SQS 53 series (bow mounted).

0 + 1 + 20 "TICONDEROGA" CLASS GUIDED MISSILE CRUISERS (CG) (AEGIS) (ex-DDG)

Name	*No.*	*Builder/Programme*	*Laid down*	*Launched*	*Commissioned*	*F/S*
TICONDEROGA	CG 47 (ex-DDG 47)	Ingalls Shipbuilding Corp	21 Jan 1980	16 May 1981	Jan 1983	Bldg
—	CG 48 (ex-DDG 48)	Ingalls Shipbuilding Corp	Dec 1981	Feb 1983	July 1984	Ord
—	CG 49/50	Approved FY 1981	—	—	—	Proj
—	CG 51/52	Requested FY 1982	—	—	—	Proj
—	CG 53/55	Proposed FY 1983	—	—	—	Proj
—	CG 56/59	Proposed FY 1984	—	—	—	—
—	CG 60/63	Proposed FY 1985	—	—	—	—
—	CG 64/67	Proposed FY 1986	—	—	—	—

Displacement, tons: 9 055 full load
Dimensions, feet (metres): 563·3 × 55 × 31
(171·7 × 16·8 × 9·5)
Aircraft: 2 LAMPS helicopters
Missiles: SSM: 16 Harpoon (8-tube launchers);
SAM/ASW: 88 Standard MR/ASROC
(2 twin Mk 26 launchers) (see notes)
Guns: 2—5 in *(127 mm)*/54 (single Mk 45);
2—20 mm/76 Phalanx (6-barrelled Mk 15 CIWS)
A/S weapons: ASROC; 6—Mk 32 torpedo tubes (triples)
Main engines: 4 General Electric LM 2500 gas turbines;
80 000 shp; 2 shafts
Speed, knots: 30+
Complement: 316 (27 officers, 289 enlisted men)

The "Ticonderoga" class fulfills the proposal for a non-nuclear Aegis armed ship as proposed in the early 1970s, but subsequently dropped to avoid conflict with the Navy's nuclear propelled cruiser programme.
The original programme class force level was 18 which was increased to 28 in February 1980.

Design: The "Ticonderoga" class design is a modification of the "Spruance" class. The same basic hull will be used, with the same gas turbine propulsion plant. The design calls for 1-in steel armour plate to protect the magazines.

Classifications: Originally rated as Guided Missile Destroyers (DDG). Rerated as Guided Missile Missile Cruisers (CG) on 1 January 1980. At the same time DDG 47/48 were reclassified CG 47/48.

Electronics: Aegis is described under "Shipboard Systems" in the tables in the introduction of the US section. This class will be equipped with the full Aegis system and also with the OE-82 Satellite Navigation System antenna, the WSC-3 transceiver and the SSR-1 receiver.

Fire control: Aegis Weapons Control System Mk 7 with UYK-7 computers to control radar phasing. Mk 86 gunfire control system, four Mk 99 missile guidance illuminators, Mk 116 Underwater FCS.

Nomenclature: The class is reportedly to be named after famous battles in US military history.

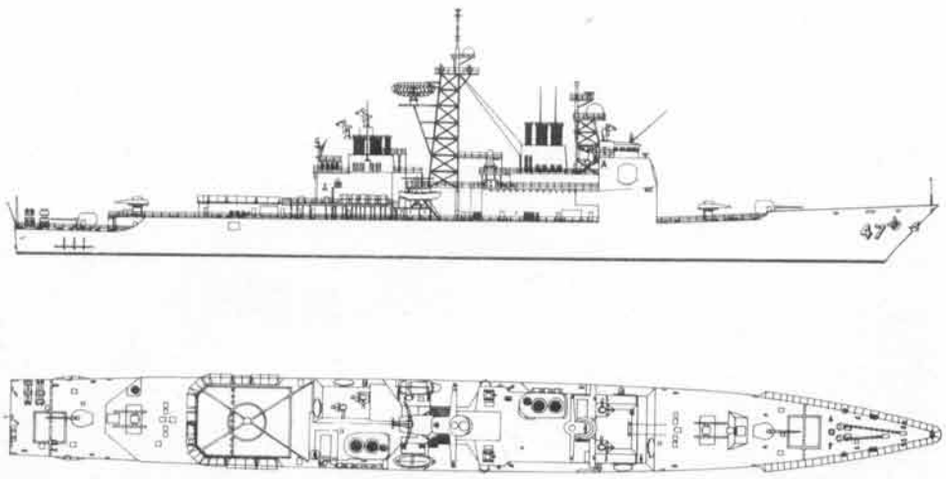
Fiscal: CG 47 was approved under the FY 1978 programme at a cost of $930 million; CG 48 under the FY 1980 programme at a cost of $820 million. CG 49/50 under the FY 1981 programme at a cost of $1 759·5 million for both.

Missiles: From CG 48 onwards each ship will be equipped with vertical launchers in place of Mk 26 launchers. Tomahawk planned in CG 52 onwards.

Radar: SPY 1A paired arrays (one forward, one aft).
Search: SPS 49.
Weapons: SPQ 9.

Rockets: One Super RBOC Mk 36 to be fitted.

Sonar: SQS 53 (bow-mounted) and TACTAS towed array.



"TICONDEROGA" Class (see *Missiles* note) *A. D. Baker III*

TICONDEROGA *1979, USN*

4 "VIRGINIA" CLASS: GUIDED MISSILE CRUISERS (nuclear propulsion) (CGN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
VIRGINIA	CGN 38	Newport News S.B. and D.D. Co	19 Aug 1972	14 Dec 1974	11 Sep 1976	AA
TEXAS	CGN 39	Newport News S.B. and D.D. Co	18 Aug 1973	9 Aug 1975	10 Sep 1977	AA
MISSISSIPPI	CGN 40	Newport News S.B. and D.D. Co	22 Feb 1975	31 July 1976	5 Aug 1978	AA
ARKANSAS	CGN 41	Newport News S.B. and D.D. Co	17 Jan 1977	21 Oct 1978	18 Oct 1980	AA

Displacement, tons: 10 000 full load
Dimensions, feet (metres): 585 × 63 × 29·5 *(178·4 × 19·2 × 9)*
Aircraft: 2 (see *Helicopters* note)
Missiles: SSM: 8 Harpoon (2 quads);
SAM/ASW: Standard MR/ASROC (2 twin Mk 26 launchers)
Guns: 2—5 in *(127 mm)*/54 (single Mk 45)
A/S weapons: ASROC (see above);
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines; 100 000 shp; 2 shafts
Reactors: 2 pressurised-water cooled D2G (General Electric)
Speed, knots: 30+
Complement: 472 (27 officers, 445 enlisted men)

Virginia was authorised in the FY 1970 new construction programme, *Texas* in the FY 1971, *Mississippi* in the FY 1972, and *Arkansas* in the FY 1975.
CGN 42 was proposed in the FY 1976 new construction programme but was not funded by the Congress.
Construction of this class has been delayed because of a shortage of skilled labour in the shipyard. Newport News S.B. & D.D. Co (Virginia) is the only shipyard in the USA now engaged in the construction of nuclear surface ships. The first three ships of the class were more than one year behind their original construction schedules.

Classification: These ships were originally classified as guided missile frigates (DLGN); subsequently reclassified as guided missile cruisers (CGN) on 30 June 1975.

Design: The principal differences between the "Virginia" and "California" classes are the improved anti-air warfare capability, electronic warfare equipment, and anti-submarine fire control system. The deletion of the separate ASROC Mk 16 launcher permitted the "Virginia" class to be 10 ft shorter.

Electronics: Naval Tactical Data System (NTDS).
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: Mk 74 missile control directors.
Digital Mk 116 ASW FCS.
Mk 86 WCS for forward missile channel and gun fire.

Fiscal: The cost of these ships have increased noticeably during their construction. Fiscal data on the earlier ships were in the 1974-75 and earlier editions.

Gunnery: Mk 86 gunfire control directors. Two 20 mm Mk 15 CIWS will be fitted in each ship.
Each ship has two 40 mm saluting guns.

Helicopters: A hangar for helicopters is installed beneath the fantail flight-deck with a telescoping hatch cover and an electro-mechanical elevator provided to transport helicopters between the main deck and hangar. These are the first US post-World War II destroyer/cruiser ships with a hull hangar.

Missiles: The initial design for this class provided for a single surface-to-air missile launcher; revised in 1969 to provide two Mk 26 launchers that will fire the Standard-Medium Range (MR) surface-to-air missile and the ASROC anti-submarine missile. "Mixed" Standard/ASROC magazines are fitted for each launcher. Standard SM-1MR to be replaced by Standard SM-2MR in FY 1983.
It is planned to fit the Tomahawk cruise missile.

Radar: 3D search: SPS 48A.
Search: SPS 40B and 55.
Fire control: SPG 51, SPG 60D, SPQ 9A.

Rockets: Mk 36 Chaffroc RBOC (Rapid Bloom Overhead Chaff) to be fitted.

Sonar: SQS 53A (bow-mounted).

TEXAS (with Harpoon)

10/1980, J. L. M. van der Burgh

MISSISSIPPI

8/1978, USN (PM3 J. Swanstrom)

VIRGINIA

9/1978, Michael D. J. Lennon

2 "CALIFORNIA" CLASS: GUIDED MISSILE CRUISERS (nuclear propulsion) (CGN)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
CALIFORNIA	CGN 36	Newport News Shipbuilding Co	23 Jan 1970	22 Sep 1971	16 Feb 1974	AA
SOUTH CAROLINA	CGN 37	Newport News Shipbuilding Co	1 Dec 1970	1 July 1972	25 Jan 1975	AA

Displacement, tons: 9 561 standard; 11 100 full load
Dimensions, feet (metres): 596 × 61 × 31·5
(181·7 × 18·6 × 9·6)
Missiles: SSM: 8 Harpoon (2 quads);
SAM: 80 Standard MR (two single Mk 13 launchers) (see note)
Guns: 2—5 in *(127 mm)*/54 (single Mk 45)
A/S weapons: 6 Mk 32 torpedo tubes (triples);
1 ASROC 8-tube launcher (Mk 16)
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Nuclear reactors: 2 pressurised-water cooled D2G (General Electric)
Speed, knots: 30+
Complement: 540 (28 officers, 512 enlisted men)

California was authorised in the FY 1967 new construction programme and *South Carolina* in the FY 1968 programme. The construction of a third ship of this class (DLGN 38) was also authorised in FY 1968, but the rising costs of these ships and development of the DXGN/DLGN 38 design (now "Virginia" class) caused the third ship to be cancelled.

Classification: These ships were originally classified as guided missile frigates (DLGN); subsequently reclassified as guided missile cruisers (CGN) on 30 June 1975.

Design: These ships have tall, enclosed towers supporting radar antennae in contrast to the open lattice masts of the previous nuclear frigates *Truxtun* and *Bainbridge*.
No helicopter support facilities provided.

Electronics: Fitted with the Naval Tactical Data System (NTDS). Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: Estimated nuclear core life for these ships provides 700 000 miles range; estimated cost is $11·5 million for the two initial nuclear cores in each ship.

Fire control: Two Mk 74 MFCS; one Mk 86 GFCS; one Mk 11 weapons direction system (to be replaced by Mk 13).

Fiscal: Estimated cost is $200 million for *California* and $180 million for *South Carolina*.

Gunnery: Two Phalanx 20 mm CIWS (Mk 15) to be fitted.
Each ship carries two 40 mm saluting guns.

Missiles: These ships carry 80 surface-to-air missiles divided equally between a magazine beneath each launcher.

Radar: 3D air search: SPS 48.
Search: SPS 10 and 40.
Fire control: SPG 51D, SPG 60 and SPQ 9A.

Rockets: Mk 36 Chaffroc Super RBOC to be fitted in place of Mk 28 system.

Sonar: SQS 26CX (bow-mounted).

CALIFORNIA

1979, L. and L. van Ginderen

SOUTH CAROLINA

9/1976, USN

CALIFORNIA

6/1977, C. and S. Taylor

1 "TRUXTUN" CLASS: GUIDED MISSILE CRUISER (nuclear propulsion) (CGN)

Name	*No*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FIS*
TRUXTUN	CGN 35	New York SB Corp (Camden, New Jersey)	17 June 1963	19 Dec 1964	27 May 1967	PA

Displacement, tons: 8 200 standard; 9 127 full load
Dimensions, feet (metres): 564 × 58 × 31 *(171·9 × 17·7 × 9·4)*
Aircraft: 1 helicopter
Missiles: SSM: 8 Harpoon (2 quads);
SAM/ASW: 60 Standard ER/ASROC (1 twin Mk 10 launcher)
Gun: 1—5 in *(127 mm)*/54 (single Mk 42)
A/S weapons: ASROC (see above);
4 fixed torpedo tubes (Mk 32)
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Nuclear reactors: 2 pressurised-water cooled D2G (General Electric)
Speed, knots: 29
Complement: 528 (36 officers, 492 enlisted men)
Flag accommodations: 18 (6 officers, 12 enlisted men)

Truxtun was the US Navy's fourth nuclear-powered surface warship. The Navy had requested seven oil-burning frigates in the FY 1962 shipbuilding programme; Congress authorised seven ships, but stipulated that one ship must be nuclear-powered.
Although the *Truxtun* design is adapted from the "Belknap" class, the nuclear ship's gun-missile launcher arrangement is reversed from the non-nuclear ships.
Construction cost was $138·667 million.

Ammunition: Of the 60 rounds for the missile launcher no more than 20 can be ASROC.

Classification: *Truxtun* was originally classified as a guided missile frigate (DLGN); subsequently reclassified as a guided missile cruiser (CGN) on 30 June 1975.

Electronics: Naval Tactical Data System (NTDS); Tacan.
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: Power plant is identical to that of the cruiser *Bainbridge*.

Fire control: Two Mk 76 missile control systems, one Mk 68 gunfire control system, one Mk 11 weapon direction system (to be replaced by Mk 14).

Gunnery: 2 Phalanx 20 mm systems (Mk 15) to be fitted.
Two 40 mm saluting guns fitted.

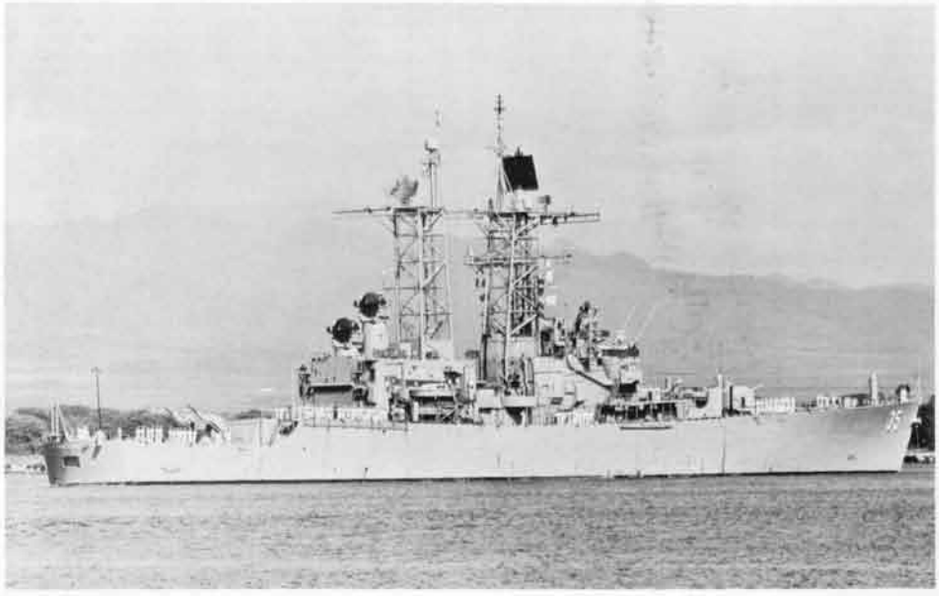
Name: *Truxtun* is the fifth ship to be named after Commodore Thomas Truxton *(sic)* who commanded the frigate *Constellation* (38 guns) in her successful encounter with the French frigate *L'Insurgente* (44) in 1799.

Radar: 3D search: SPS 48.
Search: SPS 10 and 40.
Fire control: SPG 53F, SPG 55B.

Rockets: Mk 36 Chaffroc Super RBOC will be fitted soon replacing the Mk 28 system.

Sonar: SQS 26 (bow-mounted).

Torpedoes: Fixed Mk 32 tubes are built into superstructure.



TRUXTUN (with Harpoon) *3/1980, Dr. Giorgio Arra*

TRUXTUN (with Harpoon) *3/1980, Dr. Giorgio Arra*

TRUXTUN *8/1978, Dr. Giorgio Arra*

9 "BELKNAP" CLASS: GUIDED MISSILE CRUISERS (CG)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
BELKNAP	CG 26	Bath Iron Works Corporation	5 Feb 1962	20 July 1963	7 Nov 1964	AA
JOSEPHUS DANIELS	CG 27	Bath Iron Works Corporation	23 Apr 1962	2 Dec 1963	8 May 1965	AA
WAINWRIGHT	CG 28	Bath Iron Works Corporation	2 July 1962	25 Apr 1964	8 Jan 1966	AA
JOUETT	CG 29	Puget Sound Naval Shipyard	25 Sep 1962	30 June 1964	3 Dec 1966	PA
HORNE	CG 30	San Francisco Naval Shipyard	12 Dec 1962	30 Oct 1964	15 Apr 1967	PA
STERETT	CG 31	Puget Sound Naval Shipyard	25 Sep 1962	30 June 1964	8 Apr 1967	PA
WILLIAM H. STANDLEY	CG 32	Bath Iron Works Corporation	29 July 1963	19 Dec 1964	9 July 1966	PA
FOX	CG 33	Todd Shipyard Corporation	15 Jan 1963	21 Nov 1964	8 May 1966	PA
BIDDLE	CG 34	Bath Iron Works Corporation	9 Dec 1963	2 July 1965	21 Jan 1967	AA

Displacement, tons: 6 570 standard; 7 900 full load
Dimensions, feet (metres): 547 × 54·8 × 28·8, sonar—19, keel *(166·7 × 16·7 × 8·8—5·8)*
Aircraft: 1 SH-2D LAMPS helicopter
Missiles: SSM: 8 Harpoon (quads) being fitted (fitted in CG 26-28, 32-33);
SAM: 60 Standard ER/ASROC (1 twin Mk 10 launcher)
Guns: 1—5 in *(127 mm)*/54 (Mk 42)
2—20 mm CIWS Phalanx (already in CG 26, 29 and 34)
A/S weapons: ASROC (see above); 2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines (General Electric except De Laval in CG 33); 85 000 shp; 2 shafts
Boilers: 4 (Babcock & Wilcox in CG 26-28, 32-34; Combustion Engineering in CG 29-31)
Speed, knots: 32·5
Complement: 418 (31 officers, 387 enlisted men) including squadron staff; 520 (*Belknap* including Flag and staff)
Flag accommodations: 18 (6 officers; 12 enlisted men)

These ships were authorised as guided missile frigates; DLG 26-28 in the FY 1961 shipbuilding programme; DLG 29-34 in the FY 1962 programme.
Belknap was severely damaged in a collision with the carrier *John F. Kennedy* (CV 67) on 22 November 1975 near Sicily; the cruiser was towed back to the USA for rebuilding at Philadelphia Naval Shipyard. Placed "Out of Commission—Special" 20 December 1975. Repair and modernisation began 9 January 1978. Estimated cost $213 million and includes new improved 5-in gun; up-dated missile armament, sonar communications and radar suites as well as improvements in habitability. Recommissioned 10 May 1980.

Ammunition: 60 missiles for Mk 10 launcher of which only 20 can be ASROC.

Classification: These ships were originally classified as guided missile frigates (DLG); reclassified as guided missile cruisers (CG) on 30 June 1975.

Design: These ships are distinctive by having their single missile launcher forward and 5-in gun mount aft. This arrangement allowed missile stowage in the larger bow section and provided space aft of the superstructure for a helicopter hangar and platform. The reverse gun-missile arrangement, preferred by some commanding officers, is found in *Truxtun*.

Electronics: Naval Tactical Data System (NTDS); Tacan.
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: Two Mk 76 missile control systems, one Mk 68 gunfire control system, one Mk 11 weapon direction system (Mk 7 in *Josephus Daniels* and *Belknap*) (Mk 14 WDS to be fitted in place of Mk 11 WDS).

Gunnery: All of this class will be fitted with two Phalanx 20 mm Mk 15 CIWS.

Helicopters: These ships are the only conventionally powered US cruisers with a full helicopter support capability. All fitted with the Light Airborne Multi-Purpose System, now the SH-2D helicopter. *Belknap* embarked the first operational SH-2D LAMPS in December 1971.

Missiles: A "triple-ring" rotating magazine stocks both Standard anti-craft missiles and ASROC anti-submarine rockets, feeding either weapon to the launcher's two firing arms. The rate of fire and reliability of the launcher provide a potent AAW/ASW capability to these ships.
Belknap will be first of this class to receive Standard SM-2 MR missiles.
This class will be fitted with Tomahawk cruise missiles, *Fox* having carried the experimental version since 1977.

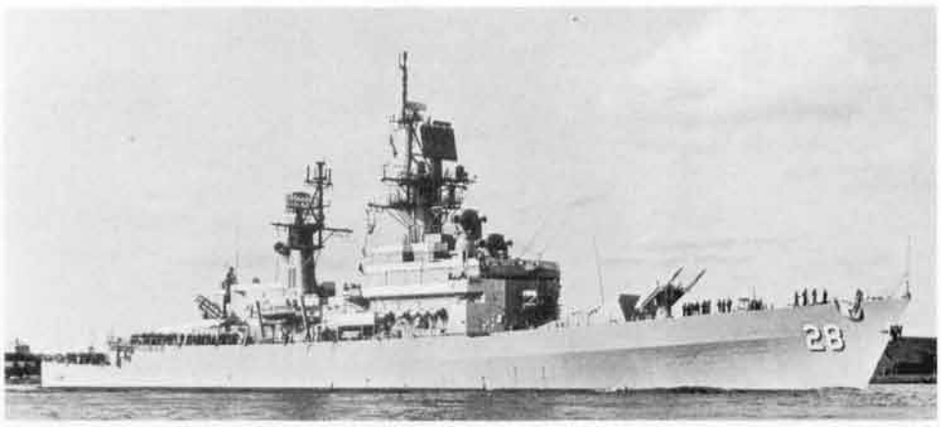
Radar: 3D search: SPS 48 (48C in *Belknap*).
Search: SPS 10 and 49 (26-28 and 30) or 40 (remainder).
Fire control: SPS 53F and 55B.

Rockets: Mk 36 Chaffroc Super RBOC to be fitted in place of Mk 28 (already in CG 26-28 and 32-33).

Sonar: SQS 26 (bow-mounted) (SQS 53C in *Belknap*).

Torpedoes: As built, these ships each had two 21-in tubes for anti-submarine torpedoes installed in the structure immediately forward of the 5-in mount, one tube angled out to port and one to starboard; subsequently removed.

WILLIAM H. STANDLEY — *1980, L. and L. van Ginderen*



WAINWRIGHT (with Harpoon) — *10/1980, Leo van Ginderen*

BELKNAP — *7/1980, USN (JOI W. C. Christensen)*

9 "LEAHY" CLASS: GUIDED MISSILE CRUISERS (CG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
LEAHY	CG 16	Bath Iron Works Corporation	3 Dec 1959	1 July 1961	4 Aug 1962	PA
HARRY E. YARNELL	CG 17	Bath Iron Works Corporation	31 May 1960	9 Dec 1961	2 Feb 1963	AA
WORDEN	CG 18	Bath Iron Works Corporation	19 Sep 1960	2 June 1962	3 Aug 1963	PA
DALE	CG 19	New York S.B. Corporation	6 Sep 1960	28 July 1962	23 Nov 1963	AA
RICHMOND K. TURNER	CG 20	New York S.B. Corporation	9 Jan 1961	6 Apr 1963	13 June1964	AA
GRIDLEY	CG 21	Puget Sound Bridge & Dry Dock Co	15 July 1960	31 July 1961	25 May 1963	PA
ENGLAND	CG 22	Todd Shipyards Corporation	4 Oct 1960	6 Mar 1962	7 Dec 1963	PA
HALSEY	CG 23	San Francisco Naval Shipyard	26 Aug 1960	15 Jan 1962	20 July 1963	PA
REEVES	CG 24	Puget Sound Naval Shipyard	1 July 1960	12 May 1962	15 May 1964	PA

Displacement, tons: 5 670 standard; 7 800 full load
Dimensions, feet (metres): 533 × 54·9 × 24·8 sonar—19·6 keel *(162·5 × 16·6 × 7·6—6)*
Missiles: SSM: 8 Harpoon (2 quads) (already in CG 17, 20, 21, 23 and 24);
SAM: 80 Standard ER (SM-2) (Two Mk 10 launchers)
Guns: 2—20 mm Mk 15 CIWS Phalanx (already in CG 16, 18, 19, 22)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines (see *Engineering* notes); 85 000 shp; 2 shafts
Boilers: 4 (Babcock & Wilcox in CG 16-20, Foster-Wheeler in 21-24)
Speed, knots: 32·7
Fuel, tons: 1 800
Range, miles: 8 000 at 20 knots
Complement: 377 (18 officers, 359 enlisted men) (16, 17, 21, 23); 413 (32 officers, 381 men) (18-20, 22, 24)
Flag accommodations: 18 (6 officers, 12 enlisted men)

These ships are "double-end" missile cruisers especially designed to screen fast carrier task forces. Authorised as DLG 16-18 in the FY 1958 new construction programme and DLG 19-24 in the FY 1959 programme.

Classification: These ships were originally classified as guided missile frigates (DLG); reclassified as guided missile cruisers (CG) on 30 June 1975.

Design: These ships are distinctive in having twin missile launchers forward and aft with ASROC launcher between the forward missile launcher and bridge on main deck level.
There is a helicopter landing area aft but only limited support facilities are provided; no hangar.

Electronics: Naval Tactical Data System (NTDS) fitted during AAW modernisation.
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: General Electric turbines in CG 16-18, De Laval turbines in CG 19-22, and Allis-Chalmers turbines in CG 23 and CG 24.

Fire control: Four Mk 76 missile control systems, one Mk 11 weapon direction system, (to be replaced by Mk 14 WDS). Mk 114 ASW fire control system.

Gunnery: Two 40 mm saluting guns fitted.

Modernisation: These ships were modernised between 1967 and 1972 to improve their Anti-Air Warfare (AAW) capabilities. Superstructure enlarged to provide space for additional electronic equipment, including NTDS; improved Tacan fitted and improved guidance system for Terrier/Standard missiles installed, and larger ship's service turbo generators provided.
All ships modernised at Bath Iron Works except *Leahy* at Philadelphia Naval Shipyard.
Cost of *Leahy* modernisation was $36·1 million.

Radar: 3D search: SPS 48 (replacing SPS 39 or 52 in some ships).
Search: SPS 10, 37.
Fire control: SPG 53F and 55B.

Rockets: Mk 36 Chaffroc Super RBOC to be fitted (already in CG 17, 21, 23, 24)

Sonar: SQS 23 bow-mounted.

DALE *10/1979, Michael D. J. Lennon*

ENGLAND *1978, Dr. Giorgio Arra*

HALSEY (with Harpoon) *12/1979, Dr. Giorgio Arra*

1 "BAINBRIDGE" CLASS: GUIDED MISSILE CRUISER (nuclear propulsion) (CGN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
BAINBRIDGE	CGN 25	Bethlehem Steel Co, Quincy, Mass	15 May 1959	15 Apr 1961	6 Oct 1962	PA

Displacement, tons: 7 600 standard; 8 592 full load
Dimensions, feet (metres): 565 × 57·9 × 25·4
(172·3 × 17·6 × 7·7)
Missiles: SSM: 8 Harpoon (2 quads);
SAM: 80 Standard ER (SM-1) (2 twin Mk 10 launchers)
Guns: 2—20 mm Mk 67 (twin)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines, approx 60 000 shp; 2 shafts
Nuclear reactors: 2 pressurised-water cooled D2G (General Electric)
Speed, knots: 30
Complement: 470 (34 officers, 436 enlisted men)
Flag accommodations: 18 (6 officers, 12 enlisted men)

Bainbridge was the US Navy's third nuclear-powered surface warship (after the cruiser *Long Beach* and the aircraft carrier *Enterprise*). Authorised in the FY 1959 shipbuilding programme. Construction cost was $163·61 million.

Classification: *Bainbridge* was originally classified as a guided missile frigate (DLGN); reclassified as a guided missile cruiser (CGN) on 30 June 1975.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: Development of a nuclear power plant suitable for use in a large "destroyer type" warship began in 1957. The Atomic Energy Commission's Knolls Atomic Power Laboratory undertook development of the destroyer power plant (designated D1G/D2G).

Fire control: Four Mk 76 missile control systems, one Mk 11 weapons direction system (to be replaced by Mark 14).

Gunnery: Four 3-in *(76 mm)* in twin mountings removed during modernisation. Two 40 mm saluting guns carried.

BAINBRIDGE *3/1978, USN (PH1 A. E. Legare)*

Missiles: Has Mk 10 Mod 5 launcher forward and a Mk 10 Mod 6 launcher aft. The 80 missiles are evenly split between the two rotating magazines.

Modernisation: *Bainbridge* underwent an Anti-Air Warfare (AAW) modernisation at the Puget Sound Naval Shipyard from 30 June 1974 to 24 September 1976. The ship was fitted with the Naval Tactical Data System (NTDS) and improved guidance capability for missiles. Estimated cost of modernisation $103 million.

Radar: 3D search: SPS 52.
Search: SPS 10 and 37.
Fire control: Four SPG 55A.

Rockets: Mk 36 Chaffroc Super RBOC to be fitted.

Sonar: SQS 23 (bow-mounted).

1 "LONG BEACH" CLASS: GUIDED MISSILE CRUISER (nuclear propulsion) (CGN)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
LONG BEACH	CGN 9 (ex-CGN 160, CLGN 160)	Bethlehem Steel Co, Quincy, Mass	2 Dec 1957	14 July 1959	9 Sep 1961	PA

Displacement, tons: 14 200 standard; 15 540 light; 17 100 full load
Dimensions, feet (metres): 721·2 × 73·2 × 29·7
(219·9 × 22·3 × 9·1)
Aircraft: Deck for utility helicopter
Missiles: SSM: 8 Harpoon (2 quads);
SAM: Terrier/Standard ER
(2 twin Mk 10 launchers) (see note)
Guns: 2—5 in *(127 mm)*/38 (single Mk 30)
2—20 mm CIWS Mk 15 Phalanx
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines (General Electric); 80 000 shp; 2 shafts
Nuclear reactors: 2 pressurised-water cooled C1W (Westinghouse)
Speed, knots: 30
Complement: 1 160 (79 officers, 1 081 enlisted men)
Flag accommodations: 68 (10 officers, 58 enlisted men)

Long Beach was the first ship to be designed as a cruiser for the USA since the end of World War II. She is the world's first nuclear-powered surface warship and the first warship to have a guided missile main battery. She was authorised in the FY 1957 new construction programme. Estimated construction cost was $332·85 million.

Aegis: Long-lead funding for the installation of an Aegis system was provided in the FY 1977 programme.
The conversion was due to start in October 1978 for completion in October 1981. It was cancelled in December 1976 and the authorised funds rescinded (see *Modernisation* note below).

Classification: Ordered as a guided missile light cruiser (CLGN 160) on 15 October 1956; reclassified as a guided missile cruiser (CGN 160) early in 1957 and renumbered (CGN 9) on 1 July 1957.

Design: Initially planned at about 7 800 tons (standard) to test the feasibility of a nuclear-powered surface warship. Early in 1956 her displacement was increased to 11 000 tons and a second Terrier missile launcher was added. A Talos missile launcher (now removed) was also added which, with other features, increased displacement to 14 200 tons.

Electronics: Naval Tactical Data System (NTDS).
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: The reactors are similar to those of *Enterprise* (CVN 65). *Long Beach* first got underway on nuclear power on 5 July 1961. After four years of operation and having steamed more than 167 700 miles she underwent her first overhaul and refuelling at the Newport News Shipbuilding and Dry Dock Company from August 1965 to February 1966.

Fire control: Four Mk 76 missile fire control systems, one Mk 77 Mod 4 missile fire control system, two Mk 56 gunfire control systems, one Mk 6 weapon direction system.

Gunnery: Completed with an all-missile armament. Two single 5-in mounts were fitted during 1962-63. Two Phalanx 20 mm CIWS Mk 15 to be fitted. Two 40 mm saluting guns carried.

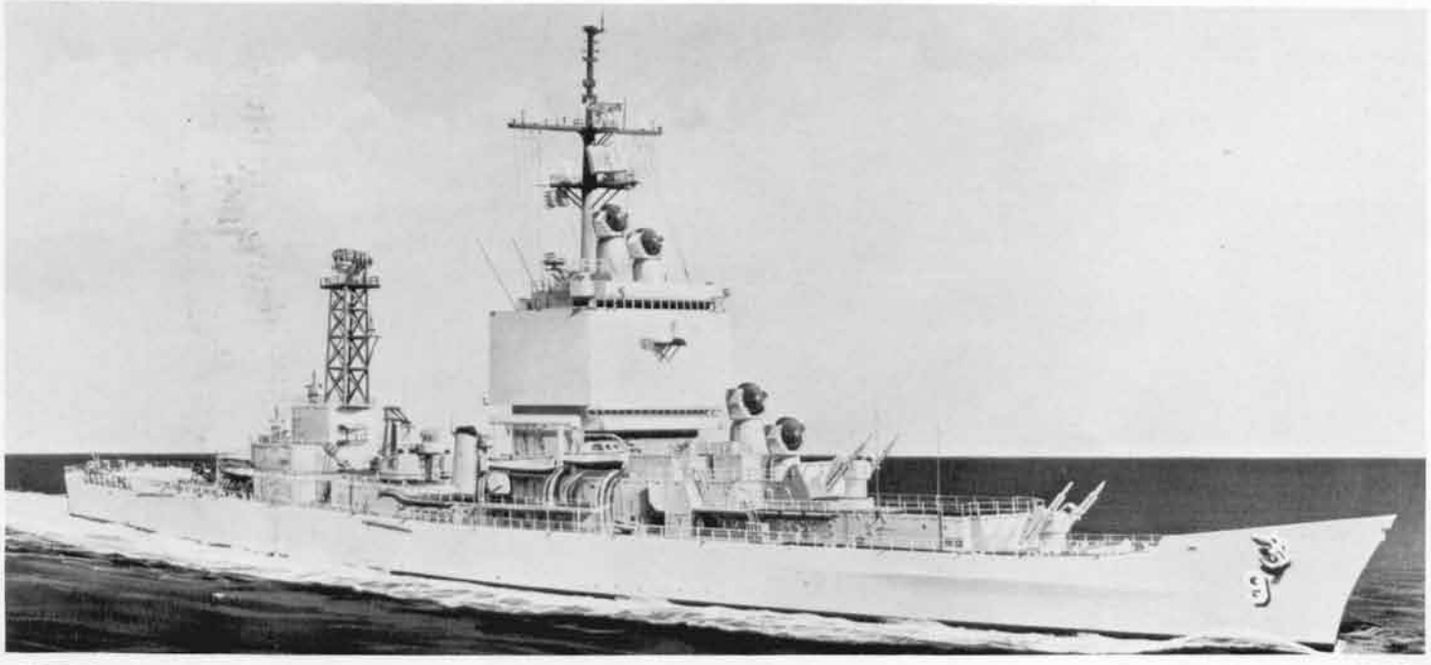
Missiles: *Long Beach* has two Mk 10 twin missile launchers forward. Her magazines hold 120 missiles.

Modernisation: As a result of the Aegis cancellation (see above) *Long Beach* is undergoing a mid-life modernisation. This is to include updating of missile systems, restoration of the missile radars, the present SPS 32 and 33 air search to be replaced by SPS 48 and 49 systems, replacement of the ship's computer and modernisation of the communications system. Estimated cost of modernisation—$267 million. Length of modernisation—two years (6 October 1980-6 October 1982) at Puget Sound Naval Shipyard.

Radar: 3D search: SPS 48.
Search: SPS 10 and 49B.
Fire control: Four SPG 55A.

Rockets: Mk 36 Chaffroc RBOC to be fitted in place of Mk 28.

Sonar: SQS 23.



LONG BEACH (after 1980-82 modernisation) *1980, USN*

2 "ALBANY" CLASS: GUIDED MISSILE CRUISERS (CG)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
ALBANY	CG 10 (ex-CA 123)	Bethlehem Steel Co, Fore River	6 Mar 1944	30 June 1945	15 June 1946	AR
CHICAGO	CG 11 (ex-CA 136)	Philadelphia Navy Yard	28 July 1943	20 Aug 1944	10 Jan 1945	PR

Displacement, tons: 13 700 standard; 18 240 full load (17 700 *Chicago*)
Dimensions, feet (metres): 674 × 71 × 33·5 *(205·4 × 21·6 × 10·2)*
Missiles: SAM: 84 Tartar (2 twin Mk 11 launchers)
Guns: 2—5 in *(127 mm)*/38 (single Mk 24)
A/S weapons: 1 ASROC 8-tube launcher; 2 triple torpedo tubes (Mk 32)
Helicopters: Deck for utility helicopters
Main engines: 4 geared turbines General Electric; 120 000 shp; 4 shafts
Boilers: 4 Babcock & Wilcox
Speed, knots: 32
Complement: 1 222 (72 officers, 1 150 enlisted men)
Flag accommodations: 68 (10 officers, 58 enlisted men)

ALBANY — *8/1979, Achille Rastelli*

This class was fully converted from heavy cruisers, *Albany* having been a unit of the "Oregon City" class and *Chicago* of the "Baltimore" class. Used solely as flagships.
Originally it was planned to delete these two ships in FY 1980 and dispose of them by scrapping. However, due to international tensions, both were decommissioned and laid up. It is planned to retain these ships, in reserve, for a minimum of three years. *Chicago* was decommissioned on 1 March 1980 at San Diego and is laid up at Bremerton. *Albany* was decommissioned on 29 August 1980 at Norfolk where she is laid up.

Conversion: During conversion stripped down to the main hull with all cruiser armament and superstructure being removed. New superstructure made extensive use of aluminium to reduce weight and improve stability. *Albany* was converted at the Boston Naval Shipyard between January 1959 and new commissioning on 3 November 1962 and *Chicago* at San Francisco Naval Shipyard from July 1959 to new commissioning on 2 May 1964.

Electronics: Naval Tactical Data System (NTDS) is fitted in *Albany*.
Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Fire control: Two Mk 77 missile fire control systems, four Mk 74 missile fire control systems, two Mk 56 gunfire control systems, one Mk 6 weapon direction system.

Gunnery: No guns were fitted when this class was first converted to missile cruisers. Two single open-mount 5-in guns were fitted subsequently to provide low-level defence.
Two 40 mm saluting guns.

Modernisation: *Albany* underwent an extensive anti-air warfare modernisation at the Boston Naval Shipyard, including installation of NTDS, a digital Talos fire control system and improved radars. This began in February 1967 and was completed in August 1969. She was formally recommissioned on 9 November 1968. Talos now removed.
Both were due for major overhauls in 1978-79 but due to their age these were cancelled and they were laid up.

Radar: 3D search: SPS 48 *(Albany)*.
Search: SPS 10, 30 and 43 (and SPS 52 in *Chicago*).
Fire control: Four SPG 49B; four SPG 51C.

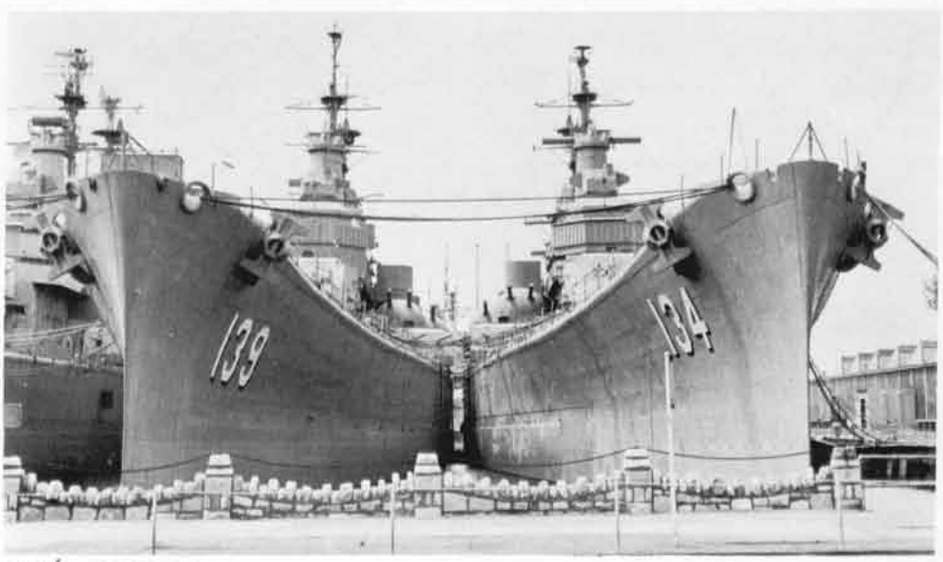
Rockets: Mk 28 Chaffroc RBOC.

Sonar: SQS 23 (bow-mounted).

2 "DES MOINES" CLASS: GUN CRUISERS (CA)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
DES MOINES	CA 134	Bethlehem Steel Co, Fore River	28 May 1945	27 Sep 1946	16 Nov 1948	AR
SALEM	CA 139	Bethlehem Steel Co, Fore River	4 July 1945	25 Mar 1947	14 May 1949	AR

Displacement, tons: 17 000 standard; 20 950 full load
Dimensions, feet (metres): 716·5 × 76·3 × 25·4 *(218·4 × 23·3 × 7·7)*
Guns: 9—8 in *(203 mm)*/55 (triple); 12—5 in *(127 mm)*/38 (twin Mk 32); 20—3 in *(76 mm)*/50 (twin Mk 33) *(Des Moines)*; 22—3 in *(Salem)*
Main engines: 4 geared turbines (General Electric); 120 000 shp; 4 shafts
Boilers: 4 (Babcock & Wilcox)
Speed, knots: 31·5
Complement: 1 803 (116 officers, 1 687 enlisted men *(Des Moines)*)
1 738 (115 officers, 1 623 enlisted men *(Salem)*)



SALEM and DES MOINES — *5/1980, L. and L. van Ginderen*

These ships were the largest and most powerful 8-in gun cruisers ever built. Completed too late for World War II, they were employed primarily as flagships for the Sixth Fleet in the Mediterranean and the Second Fleet in the Atlantic. *Salem* was decommissioned on 30 January 1959 and *Des Moines* on 14 July 1961. Both laid up at Philadelphia.

Aircraft: As completed *Des Moines* had two stern catapults and carried four floatplanes; catapults later removed.

Design: These ships are an improved version of the previous "Oregon City" class.
Additional ships of this class were cancelled: *Dallas* (CA 140) and the unnamed CA 141-142, CA 149-153.

Electronics: Tacan.

Fire control: Four Mk 56 gunfire control systems, two Mk 54 gunfire control directors and four Mk 37 GFCS.

Gunnery: These cruisers were the first ships to be armed with fully automatic 8-in guns firing cased ammunition.

DESTROYERS

The rapid drop in destroyer numbers began to slow in September 1975 when the first of 31 "Spruance" class destroyers was commissioned. At this time the Navy plans to follow the "Spruance" class with a guided missile destroyer based on the same hull and machinery (DDGX).
Increasingly the Navy is using frigates for operations that previously required destroyers. Although the frigates have modern anti-submarine weapons and sensors similar to destroyers, and in some classes superior, the frigates lack the guns, electronics, 30 knot speeds, and in most cases the surface-to-air missiles considered necessary for modern anti-air warfare and surface warfare operations.

Soon after the last of the "Spruance" class ships are completed in 1983, the destroyer force is expected to consist of 70 ships: the 39 missile-armed DDG type and the 31 "Spruance" class DD type. Most or all of the "Forrest Sherman" class destroyers will probably be assigned to the Naval Reserve Force by that time.

GUIDED MISSILE DESTROYER (DDGX): PROPOSED

The first of a new class of guided missile destroyer is requested under the FY 1986 programme. There is a need for at least 49 ships of this class which will be less costly, somewhat smaller and a less capable class of ship than the "Ticonderoga" class CG. The class will supplement the planned 30 "CG 47" class ships. The DDGX primary mission will be Anti-Air Warfare, but the ships of the class will also be armed with the Tomahawk cruise missile and Harpoon. Further details are unavailable.

The proposed new class of DDX mentioned in *Jane's Fighting Ships* 1979-80 has been dropped in favour of the DDGX.

2 + 2 "KIDD" CLASS GUIDED MISSILE DESTROYERS (DDG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
KIDD (ex-Iranian *Kouroosh*)	DDG 993 (ex-US DD 993)	Ingalls Shipbuilding Corp	26 June 1978	11 Aug 1979	23 May 1981	AA
CALLAGHAN (ex-Iranian *Daryush*)	DDG 994 (ex-US DD 994)	Ingalls Shipbuilding Corp	23 Oct 1978	1 Dec 1979	Aug 1981	AA
SCOTT (ex-Iranian *Nader*)	DDG 995 (ex-US DD 995, ex-US DD 996)	Ingalls Shipbuilding Corp	12 Feb 1979	1 Mar 1980	Oct 1981	Bldg
CHANDLER (ex-Iranian *Anoushirvan*)	DDG 996 (ex-US DD 996, ex-US DD 998)	Ingalls Shipbuilding Corp	7 May 1979	24 May 1980	Dec 1981	Bldg

Displacement, tons: 8 300 full load, 6 210 light
Dimensions, feet (metres): 563 × 55 × 30 (Sonar)
(171·6 × 16·8 × 9·1)
Aircraft: 2 LAMPS helicopters
Missiles: SAM/ASW; Standard ER (SM-1)/ASROC; (twin Mk 26 launchers) (see *Missile* notes)
Guns: 2—5 in (127 mm)/54 (single Mk 45); 2—20 mm Mk 15 CIWS (see note)
A/S weapons: 2 triple Mk 32 torpedo tubes; ASROC
Main engines: 4 General Electric LM-2500 gas turbines; 80 000 shp; 2 shafts
Speed, knots: 33
Range, miles: 3 300 at 30 knots; 6 000 at 20 knots; 8 000 at 17 knots
Complement: 338 (20 officers, 318 enlisted men)

Under the approved FY 1979 supplemental budget request the US Navy took over the contracts of four destroyers originally ordered by the Iranian government in 1974, but cancelled on 3 February 1979 (DDG 995 and 996) and 31 March 1979 (DDG 993 and 994). The four were officially acquired on 25 July 1979 with the signing of the supplemental budget request and the issuing of an Executive Order. These ships are optimised for general warfare instead of anti-submarine warfare as are the "Spruance" class. They will be the most powerful destroyers in the fleet. Originally, it had been planned to build the entire "Spruance" class to this design, but because of "costs" the design was altered to the current plan.

Classification: This class was sometimes referred to as the "DD 993" or "Improved Spruance" class. Originally in 1974 six were ordered by the Imperial Iranian Government. They were assigned the hull numbers DD 993/998 for accounting purposes. In June 1976, DD 995 and 997 were cancelled by Iran. On 23 April 1978, DD 996 and 998 were reclassified DD 995 and 996. On 8 August 1979 DD 993/996 were reclassified DDG 993/996 after the US Navy had taken over their contracts.

Design: The modular concept has been used extensively to facilitate construction and future modernisation.

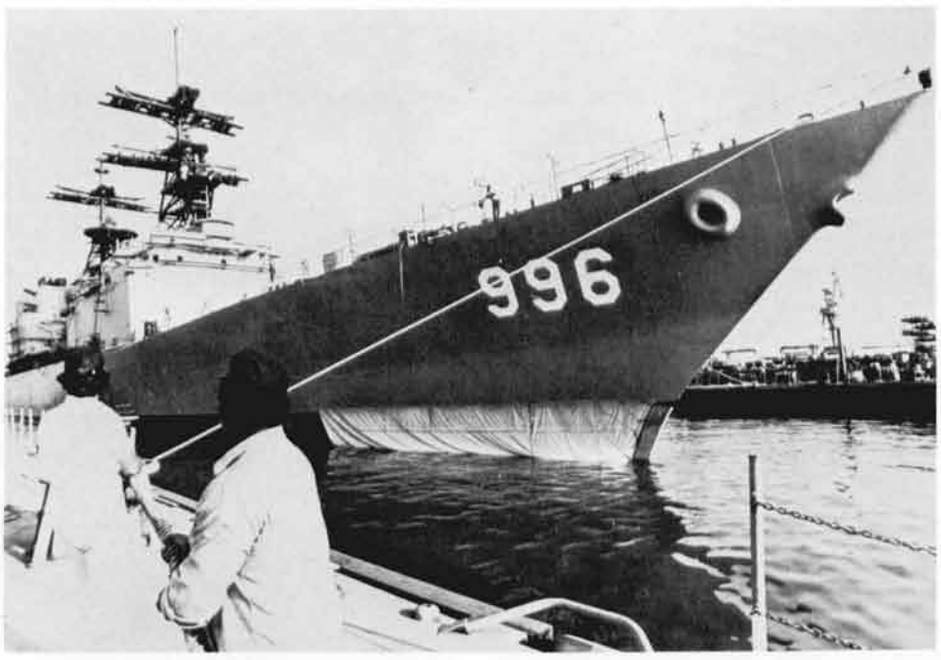
Electronics: Class equipped with Automatic Data Action Systems, also SLQ 32 electronic countermeasures set.

Engineering: The plant is similar to that of the "DD 963" and "CG 47" classes.

Fire control: Fitted with two Mk 74 missile fire control systems, two Mk 86 gun fire control systems and one Mk 116 underwater fire control system.

Gunnery: Two 20 mm CIWS (Mk 15) fitted on the O4 level fwd (starboard) and aft (port).

Missiles: The Standard missile load of 52 and the 16 ASROC missiles are split between two magazines. Tomahawk cruise missiles will be fitted.



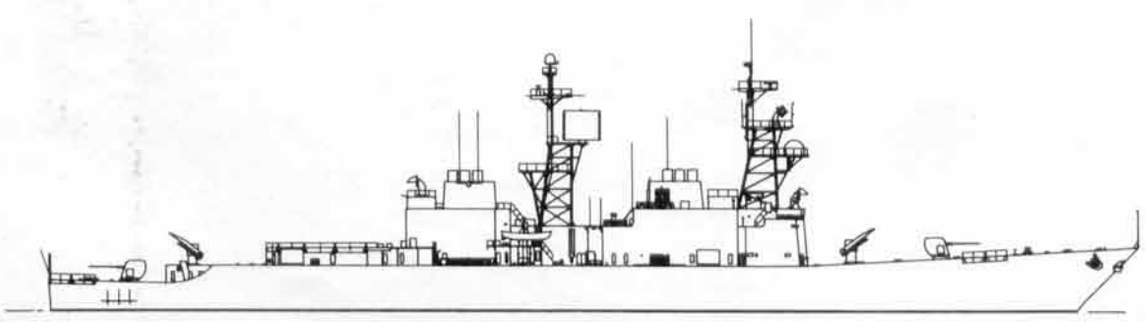
CHANDLER

12/1980, Ingalls SB Corp

Radar: Navigation/Surface search: SPS 55.
Air Search: SPS 48.
Fire control: One SPG 60; one SPQ 9.

Rockets: Mk 36 CHAFFROC system fitted.

Sonar: SQS 53 (bow-mounted).
SQR 19 (TACTAS).



"KIDD" Class

1976, A. D. Baker III

23 "CHARLES F. ADAMS" CLASS: GUIDED MISSILE DESTROYERS (DDG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
CHARLES F. ADAMS	DDG 2	Bath Iron Works, Bath, Maine	16 June 1958	8 Sep 1959	10 Sep 1960	AA
JOHN KING	DDG 3	Bath Iron Works, Bath, Maine	25 Aug 1958	30 Jan 1960	4 Feb 1961	AA
LAWRENCE	DDG 4	New York Shipbuilding Corporation	27 Oct 1958	27 Feb 1960	6 Jan 1962	AA
CLAUDE V. RICKETTS	DDG 5	New York Shipbuilding Corporation	18 May 1959	4 June 1960	5 May 1962	AA
BARNEY	DDG 6	New York Shipbuilding Corporation	18 May 1959	10 Dec 1960	11 Aug 1962	AA
HENRY B. WILSON	DDG 7	Defoe Shipbuilding Co	28 Feb 1958	23 Apr 1959	17 Dec 1960	PA
LYNDE McCORMICK	DDG 8	Defoe Shipbuilding Co	4 Apr 1958	9 Sep 1960	3 June 1961	PA
TOWERS	DDG 9	Todd Shipyards Inc, Seattle	1 Apr 1958	23 Apr 1959	6 June 1961	PA
SAMPSON	DDG 10	Bath Iron Works, Bath, Maine	2 Mar 1959	9 Sep 1960	24 June 1961	AA
SELLERS	DDG 11	Bath Iron Works, Bath, Maine	3 Aug 1959	9 Sep 1960	28 Oct 1961	AA
ROBISON	DDG 12	Defoe Shipbuilding Co	23 Apr 1959	27 Apr 1960	9 Dec 1961	PA
HOEL	DDG 13	Defoe Shipbuilding Co	1 June 1959	4 Aug 1960	16 June 1962	PA
BUCHANAN	DDG 14	Todd Shipyards Inc, Seattle	23 Apr 1959	11 May 1960	7 Feb 1962	PA
BERKELEY	DDG 15	New York Shipbuilding Corporation	1 June 1960	29 July 1961	15 Dec 1962	PA
JOSEPH STRAUSS	DDG 16	New York Shipbuilding Corporation	27 Dec 1960	9 Dec 1961	20 Apr 1963	PA
CONYNGHAM	DDG 17	New York Shipbuilding Corporation	1 May 1961	19 May 1962	13 July 1963	AA
SEMMES	DDG 18	Avondale Marine Ways Inc	18 Aug 1960	20 May 1961	10 Dec 1962	AA
TATTNALL	DDG 19	Avondale Marine Ways Inc.	14 Nov 1960	26 Aug 1961	13 Apr 1963	AA
GOLDSBOROUGH	DDG 20	Puget Sound Bridge & Dry Dock Co	3 Jan 1961	15 Dec 1961	9 Nov 1963	PA
COCHRANE	DDG 21	Puget Sound Bridge & Dry Dock Co	31 July 1961	18 July 1962	21 Mar 1964	PA
BENJAMIN STODDERT	DDG 22	Puget Sound Bridge & Dry Dock Co	11 June 1962	8 Jan 1963	12 Sep 1964	PA
RICHARD E. BYRD	DDG 23	Todd Shipyards Inc, Seattle	12 Apr 1961	6 Feb 1962	7 Mar 1964	AA
WADDELL	DDG 24	Todd Shipyards Inc, Seattle	6 Feb 1962	26 Feb 1963	28 Aug 1964	PA

Displacement, tons: 3 370 standard; 4 500 full load
Dimensions, feet (metres): 437 × 47 × 20 *(133·2 × 14·3 × 6·1)*
Missiles: SSM: 8 Harpoon (quads) (already in DDG 2, 6, 7, 11, 16, 20);
DDG 2-14: SAM: Tartar (1 twin Mk 11 launcher)
DDG 15-24: SAM: Tartar (1 single Mk 13 launcher) (see *Missile* note)
Guns: 2—5 in *(127 mm)*/54 (single Mk 42)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared steam turbines (General Electric in DDG 2, 3, 7, 8, 10-13, 15-22; Westinghouse in DDG 4-6, 9, 14, 23, 24); 70 000 shp; 2 shafts
Boilers: 4 (Babcock & Wilcox in DDG 2, 3, 7, 8, 10-13, 20-22; Foster-Wheeler in DDG 4-6, 9, 14, 23, 24; Combustion Engineering in DDG 15-19)
Speed, knots: 30
Complement: 354 (24 officers, 330 enlisted men)

DDG 2-9 were authorised in FY 1957 new construction programme, DDG 10-14 in FY 1958, DDG 15-19 in FY 1959, DDG 20-22 in FY 1960, DDG 23-24 in FY 1961.

Classification: The first eight ships were to be a continuation of "Hull" class DDs and carried hull numbers DD 952-959. Redesigned as Guided Missile Destroyers and assigned DDG numbers.

Design: These ships were built to an improved "Forrest Sherman" class design with aluminium superstructures and a high level of habitability including air conditioning in all living spaces. DDG 20-24 have stem anchors because of sonar arrangement.
Several ships have been modified with an extension of the bridge structure on the starboard side on the 02 level.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: Two Mk 74 MFCS, one Mk 68 GFCS, one Mk 4 weapon system (to be replaced by Mk 13 which is already fitted in DDG 9, 12, 15 and 21), and one Mk 114 ASW FCS.

Missiles: Ships equipped with either launcher can load, direct, and fire about six missiles per minute. *Lawrence* and *Hoel* fitted in 1972-73 with multiple launcher for Chaparral (MIM-72A) for operational testing, in addition to their Tartar launcher. There are 42 missiles carried in Mk 11 launcher ships and 40 in Mk 13 launcher ships.

Modernisation: Beginning in FY 1980 it was planned to give certain ships of this class a mid-life modernisation, officially known as "DDG upgrade". This modernisation was to include installation of the Harpoon SSM/Standard ARM missile system replacing the existing EW arrangements with the Anti-Ship Missile Defense (ASMD) EW system (including SLQ 31/32 (V) systems), replacing the radar with SPS 40C/D and SPS 52B, installing SPS 58 radar installation of an Integrated Automatic Detection and Tracking System (SYS 1), replacing the radar receivers in the CIC with UYA 4 consoles for real-time tactical data processing, replacing the Mk 4 WDS by Mk 13, installing Mk 86 FCS for the Standard ARM missiles and gun armament and fitting two SQQ 23 sonar domes with control units.
Originally all 23 ships of the class were to be modernised but the programme was cut to only ten. These were to be DDG 3, 10, 16-22 and 24 under FY 1980-83. Congress rejected the whole of this programme but the navy plans to carry out this modernisation in DDG 15-24 during two overhauls using "Fleet Maintenance" funds. The remaining 13 ships are due to be deleted beginning in the late 1980s.
Each modernisation will take 20-24 months and cost $125·7 to 178·5 million (1979$), $167 million for advance procurement was authorised under the FY 1979 programme.

Radar: 3D search: SPS 39 (SPS 52 being fitted).
Search: SPS 10 and 37 (DDG 2-14).
SPS 10 and 40 (DDG 15-24); SPS 39.
Fire control: Two SPG 51C; one SPG 53A.

Rockets: Mk 36 Chaffroc (RBOC) will be fitted.

Sonar: SQS 23 (bow-mounted) (DDG 20-24).
SQS 23 (hull-mounted) (remainder).

HENRY B. WILSON *1/1980, Dr. Giorgio Arra*

JOSEPH STRAUSS *3/1980, Dr. Giorgio Arra*

SELLERS *9/1980, L. and L. van Ginderen*

10 "COONTZ" CLASS: GUIDED MISSILE DESTROYERS (DDG)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
FARRAGUT	DDG 37 (ex-DLG 6)	Bethlehem Co, Quincy, Mass	3 June 1957	18 July 1958	10 Dec 1960	AA
LUCE (ex-*Dewey*)	DDG 38 (ex-DLG 7)	Bethlehem Co, Quincy, Mass	1 Oct 1957	11 Dec 1958	20 May 1961	AA
MACDONOUGH	DDG 39 (ex-DLG 8)	Bethlehem Co, Quincy, Mass	15 Apr 1958	9 July 1959	4 Nov 1961	AA
COONTZ	DDG 40 (ex-DLG 9)	Puget Sound Naval Shipyard	1 Mar 1957	6 Dec 1958	15 July 1960	AA
KING	DDG 41 (ex-DLG 10)	Puget Sound Naval Shipyard	1 Mar 1957	6 Dec 1958	17 Nov 1960	AA
MAHAN	DDG 42 (ex-DLG 11)	San Francisco Naval Shipyard	31 July 1957	7 Oct 1959	25 Aug 1960	AA
DAHLGREN	DDG 43 (ex-DLG 12)	Philadelphia Naval Shipyard	1 Mar 1958	16 Mar 1960	8 Apr 1961	AA
WILLIAM V. PRATT	DDG 44 (ex-DLG 13)	Philadelphia Naval Shipyard	1 Mar 1958	16 Mar 1960	4 Nov 1961	AA
DEWEY	DDG 45 (ex-DLG 14)	Bath Iron Works, Maine	10 Aug 1957	30 Nov 1958	7 Dec 1959	AA
PREBLE	DDG 46 (ex-DLG 15)	Bath Iron Works, Maine	16 Dec 1957	23 May 1959	9 May 1960	PA

Displacement, tons: 4 150/4 580 standard; 5 709/5 907 full load
Dimensions, feet (metres): 512·5 × 52·5 × 23·4
(156·3 × 16 × 7·1)
Missiles: SSM; 8 Harpoon (quads) (already in DDG 37, 40 and 43); SAM; Standard ER (SM-2) (1 twin Mk 10 launcher)
Gun: 1—5 in *(127 mm)*/54 (Mk 42) (see *Gunnery* note)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines; 85 000 shp; 2 shafts
Boilers: 4 (Foster-Wheeler in DDG 37-39; Babcock & Wilcox in DDG 40-46)
Speed, knots: 33
Fuel, tons: 900
Range, miles: 5 000 at 20 knots
Flag accommodations: 19 (7 officers, 12 enlisted men)
Complement: 377 (21 officers, 356 enlisted men)

DDG 37-42 were authorised in the FY 1956 programme; DDG 43-46 in the FY 1957 programme. Average cost per ship was $52 million.
Although now classified as "destroyers", these ships have many of the capabilities of the larger US cruiser classes, including the Terrier/Standard-ER missile system and Naval Tactical Data System (NTDS).

Classification: *Farragut, Luce* and *MacDonough* were initially classified as frigates (DL 6-8, respectively); changed to guided missile frigate (DLG) 6-8 on 14 November 1956. The first ship ordered as a missile frigate was *Coontz* which became the name ship for the class. All ten ships were classified as guided missile frigates (DLG 6-15) from completion until 30 June 1975 when reclassified as guided missile destroyers (DDG 37-46).

Design: These ships were the only US guided missile "frigates" with separate masts and funnels. They have aluminium superstructures to reduce weight and improve stability. Early designs for this class had a second 5-in gun mount in the "B" position; design revised when ASROC launcher was developed.
Helicopter landing area on stern, but no hangar and limited support capability.

Electronics: *King* and *Mahan* along with the aircraft carrier *Oriskany* (CV 34) were the first ships fitted with the Naval Tactical Data System (NTDS), conducting operational evaluation of the equipment in 1961-62. NTDS now in all ships.
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: De Laval turbines in DDG 37-39 and DDG 46; Allis-Chalmers turbines in DDG 40-45.

Fire control: Two Mk 76 missile fire control systems, one Mk 68 gunfire control system.
One Mk 11 WCS (to be replaced by Mk 14) and one Mk 111 ASW FCS.

Gunnery: The original four 3-in/50 guns were removed during modernisation.
King was fitted with the 20 mm Phalanx Mk 15 CIWS for at-sea evaluation from August 1973 to March 1974.
Two 40 mm saluting guns fitted.

Missiles: Standard SM-2 missiles to be fitted during 1980s; 40 missiles carried.

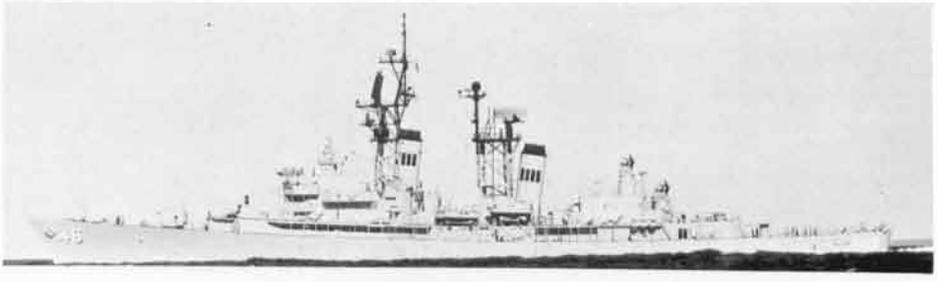
Modernisation: These ships have been modernised to improve their Anti-Air Warfare (AAW) capabilities. Superstructure enlarged to provide space for additional electronic equipment, including NTDS (previously fitted in *King* and *Mahan*); improved Tacan installed, improved guidance system for Standard missiles (SPG 55 fire control radar), and larger ship's service turbo generators fitted. *Farragut* also had improved ASROC reload capability provided (with additional structure forward of bridge) and second mast increased in height. (Other ships do not carry ASROC reloads).
All ships modernised at Philadelphia Naval Shipyard, except *Mahan* at Bath Iron Works, Bath, Maine, and *King* at Boland Machine & Manufacturing Co, New Orleans, Louisiana between 1969 and 1977.
Cost of modernisation was $39 million per ship in the FY 1970 conversion programme.

Radar: 3D search: SPS 48 (SPS 52 in *King* and *Pratt*).
Search: SPS 10 and 37 (SPS 49 in *Dahlgren*).
Fire control: One SPG 53; two SPG 55B.

Rockets: Mk 36 Chaffroc (Super RBOC) system to be fitted (already in DDG 37 and 43).

Sonar: SQS 23.

LUCE — *11/1979, C. and S. Taylor*



PREBLE — *3/1980, Dr. Giorgio Arra*

FARRAGUT (with Harpoon) — *3/1980, Dr. Robert L. Scheina*

COONTZ (with Harpoon) — *3/1979, Michael D. J. Lennon*

4 CONVERTED "FORREST SHERMAN" AND "HULL" CLASSES: GUIDED MISSILE DESTROYERS (DDG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FS*
DECATUR	DDG 31 (ex-DD 936)	Bethlehem Steel Co, Quincy, Mass	13 Sep 1954	15 Dec 1955	7 Dec 1956	PA
JOHN PAUL JONES	DDG 32 (ex-DD 932)	Bath Iron Works, Maine	18 Jan 1954	7 May 1955	5 Apr 1956	PA
PARSONS	DDG 33 (ex-DD 949)	Ingalls Shipbuilding Corporation	17 June 1957	19 Aug 1958	29 Oct 1959	PA
SOMERS	DDG 34 (ex-DD 947)	Bath Iron Works, Maine	4 Mar 1957	30 May 1958	3 Apr 1959	PA

Displacement, tons: 4 150 full load
Dimensions, feet (metres): 418·4 × 44 × 20 *(127·5 × 13·4 × 6·1)*
Missiles: SSM: Harpoon being fitted;
SAM: Tartar (1 single Mk 13 launcher)
Gun: 1—5 in *(127 mm)*/54 (Mk 42)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines (Westinghouse in *John Paul Jones* and *Decatur;* General Electric in others); 70 000 shp; 2 shafts
Boilers: 4 (Foster-Wheeler in *Decatur;* Babcock & Wilcox in *John Paul Jones, Somers* and *Parsons)*
Speed, knots: 31 knots
Fuel, tons: 500
Range, miles: 4 500 at 20 knots
Complement: 337 (22 officers, 315 enlisted men) *(Decatur* and *John Paul Jones)*
364 (25 officers and 339 enlisted men) *(Parsons* and *Somers)*

"Forrest Sherman" and "Hull" class destroyers that have been converted to a guided missile and improved ASW configuration. Plans for additional DDG conversions of this type were dropped. *Decatur* was reclassified as DDG 31 on 15 September 1966; *John Paul Jones, Somers* and *Parsons* became DDG on 15 March 1967. See "Forrest Sherman" class DDs for additional notes.

Conversion: *Decatur* began conversion to a DDG at the Boston Naval Shipyard on 15 June 1965, *John Paul Jones* at the Philadelphia Naval Shipyard on 2 December 1965, *Parsons* at the Long Beach (California) Naval Shipyard on 30 June 1965, and *Somers* at the San Francisco Bay Naval Shipyard on 30 March 1966.
Recommissioned as DDGs on 29 April 1967, 23 April 1967, 3 November 1967 and 10 February 1968 respectively.
During conversion all existing armament was removed except the forward 5-in gun; two triple ASW torpedo tubes were installed forward of the bridge; two heavy lattice masts fitted; ASROC launcher mounted aft of after funnel; single Tartar Mk 13 launcher installed aft (on 01 level; system weighs approximately 135 000 lb).
Original DDG conversion plans provided for Drone Anti-Submarine Helicopter (DASH) facilities; however, ASROC was substituted in all four ships as DASH lost favour in the Navy.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: One Mk 74 missile fire control system, one Mk 68 gunfire control system.
One Mk 4 WCS and one Mk 114 ASW FCS.

Gunnery: These ships and the "Coontz" class are the only US destroyers with one 5-in gun.

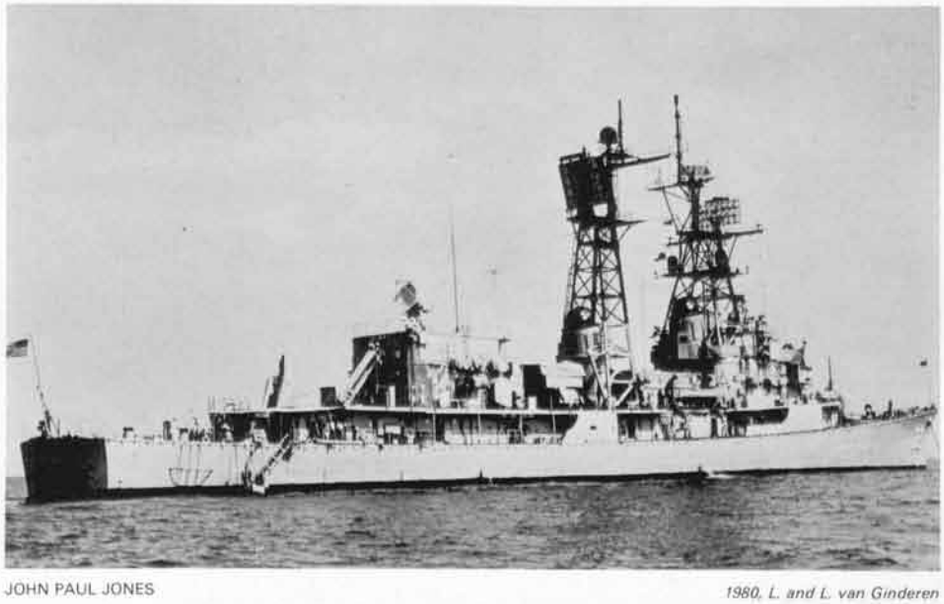
Missiles: 40 Tartar missiles carried.

Radar: 3D search: SPS 48.
Search: SPS 10 and 37 (40 in *Somers*).
Fire control: One SPG 51C; one SPG 53B.

Sonar: SQS 23 (hull-mounted).

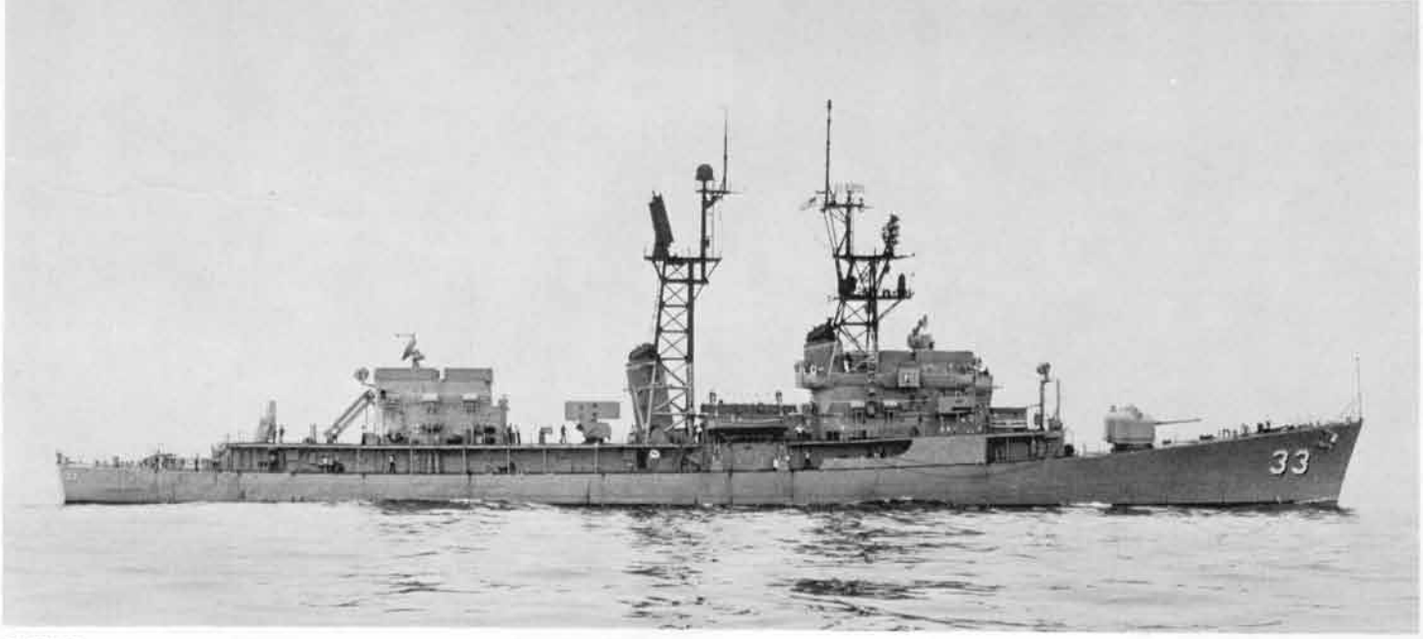
SOMERS

2/1979, Dr. Giorgio Arra



JOHN PAUL JONES

1980, L. and L. van Ginderen



PARSONS

7/1980, Dr. Giorgio Arra

30 + 1 "SPRUANCE" CLASS: DESTROYERS (DD)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
SPRUANCE	DD 963	Ingalls Shipbuilding Corporation	17 Nov 1972	10 Nov 1973	20 Sep 1975	AA
PAUL F. FOSTER	DD 964	Ingalls Shipbuilding Corporation	6 Feb 1973	23 Feb 1974	21 Feb 1976	PA
KINKAID	DD 965	Ingalls Shipbuilding Corporation	19 Apr 1973	25 May 1974	10 July 1976	PA
HEWITT	DD 966	Ingalls Shipbuilding Corporation	23 July 1973	24 Aug 1974	25 Sep 1976	PA
ELLIOTT	DD 967	Ingalls Shipbuilding Corporation	15 Oct 1973	19 Dec 1974	22 Jan 1976	PA
ARTHUR W. RADFORD	DD 968	Ingalls Shipbuilding Corporation	14 Jan 1974	1 Mar 1975	16 Apr 1977	AA
PETERSON	DD 969	Ingalls Shipbuilding Corporation	29 Apr 1974	21 June 1975	9 July 1977	AA
CARON	DD 970	Ingalls Shipbuilding Corporation	1 July 1974	24 June 1975	1 Oct 1977	AA
DAVID R. RAY	DD 971	Ingalls Shipbuilding Corporation	23 Sep 1974	23 Aug 1975	19 Nov 1977	PA
OLDENDORF	DD 972	Ingalls Shipbuilding Corporation	27 Dec 1974	21 Oct 1975	4 Mar 1978	PA
JOHN YOUNG	DD 973	Ingalls Shipbuilding Corporation	17 Feb 1975	7 Feb 1976	20 May 1978	PA
COMTE DE GRASSE	DD 974	Ingalls Shipbuilding Corporation	4 Apr 1975	26 Mar 1976	5 Aug 1978	AA
O'BRIEN	DD 975	Ingalls Shipbuilding Corporation	9 May 1975	8 July 1976	3 Dec 1977	PA
MERRILL	DD 976	Ingalls Shipbuilding Corporation	16 June 1975	1 Sep 1976	11 Mar 1978	PA
BRISCOE	DD 977	Ingalls Shipbuilding Corporation	21 July 1975	15 Dec 1976	3 June 1978	AA
STUMP	DD 978	Ingalls Shipbuilding Corporation	25 Aug 1975	29 Jan 1977	19 Aug 1978	AA
CONOLLY	DD 979	Ingalls Shipbuilding Corporation	29 Sep 1975	19 Feb 1977	14 Oct 1978	AA
MOOSBRUGGER	DD 980	Ingalls Shipbuilding Corporation	3 Nov 1975	23 July 1977	16 Dec 1978	AA
JOHN HANCOCK	DD 981	Ingalls Shipbuilding Corporation	16 Jan 1976	29 Oct 1977	1 Mar 1979	AA
NICHOLSON	DD 982	Ingalls Shipbuilding Corporation	20 Feb 1976	11 Nov 1977	12 May 1979	AA
JOHN RODGERS	DD 983	Ingalls Shipbuilding Corporation	12 Aug 1976	25 Feb 1978	14 July 1979	AA
LEFTWICH	DD 984	Ingalls Shipbuilding Corporation	12 Nov 1976	8 Apr 1978	25 Aug 1979	PA
CUSHING	DD 985	Ingalls Shipbuilding Corporation	27 Dec 1976	17 June 1978	21 Sep 1979	PA
HARRY W. HILL	DD 986	Ingalls Shipbuilding Corporation	3 Jan 1977	10 Aug 1978	17 Nov 1979	PA
O'BANNON	DD 987	Ingalls Shipbuilding Corporation	21 Feb 1977	25 Sep 1978	15 Dec 1979	AA
THORN	DD 988	Ingalls Shipbuilding Corporation	29 Aug 1977	14 Nov 1978	16 Feb 1980	AA
DEYO	DD 989	Ingalls Shipbuilding Corporation	14 Oct 1977	27 Jan 1979	22 Mar 1980	AA
INGERSOLL	DD 990	Ingalls Shipbuilding Corporation	5 Dec 1977	10 Mar 1979	12 Apr 1980	PA
FIFE	DD 991	Ingalls Shipbuilding Corporation	6 Mar 1978	1 May 1979	31 May 1980	PA
FLETCHER	DD 992	Ingalls Shipbuilding Corporation	24 Apr 1978	16 June 1979	12 July 1980	PA
—	DD 997	Ingalls Shipbuilding Corporation	20 Oct 1980	Dec 1981	Mar 1983	Bldg

Displacement, tons: 5 830 light; 7 810 full load
Dimensions, feet (metres): 563·2 × 55·1 × 29, sonar—19 keel
(171·7 × 16·8 × 8·8—5·8)
Aircraft: 1 SH-3 Sea King or 2 SH-2D LAMPS helicopters
Missiles: SSM; 8 Harpoon (quads) (not in DD 963-5, 983-5 as yet);
SAM; one NATO Sea Sparrow; Mk 29 launcher
Guns: 2—5 in *(127 mm)*/54 (single Mk 45); 2—20 mm Mk 15 CIWS Phalanx being fitted (already in DD 965)
A/S weapons: 1 ASROC 8-tube launcher
2 triple torpedo tubes (Mk 32)
Main engines: 4 General Electric LM2500 gas turbines; 80 000 shp; 2 shafts
Speed, knots: 33
Oil fuel, tons: 1 400
Range, miles: 6 000 at 20 knots
Complement: 296 (24 officers, 272 enlisted men)

According to official statements, "the primary mission of these ships is anti-submarine warfare including operations as an integral part of attack carrier task forces."
The FY 1969 new construction programme requested funding for the first five ships of this class, although, funds were denied by Congress. In the FY 1970 programme Congress approved funds for five ships, but increasing costs forced the Department of Defense to construct only three ships under the FY 1970 programme (DD 963-965); six ships were authorised in the FY 1971 programme (DD 966-971); seven ships (DD 972-978) in the FY 1972 programme; seven ships (DD 979-985) in the FY 1974 programme, and seven ships (DD 986-992) in the FY 1975 programme.
DD 997 was added to the Navy's FY 1978 programme by Congress and is not Navy initiated. Known as an "air capable" *Spruance*, she was to have an enlarged hangar and flight deck and be able to accommodate up to four LAMPS 3 ASW helicopters.
Originally two of this class were added by the US Senate. The House of Representatives failed to approve funds for any of this class. During the House-Senate Conference about the FY 1978 Military Budget, agreement was reached to provide $310 million for one ship. This sum was authorised with the proviso that no more than this should be spent on this ship. When bids were solicited from shipbuilders should they be over the $310 million, weapons, electronics and other equipment would have to be deleted to bring the cost under the limit.
Since then the cost of constructing this ship has escalated beyond the $310 million limit imposed by Congress. As a result, to cut costs, the "air capable" portions of the design have been reduced and the ship will be constructed as a 31st "Spruance" class DD—ordered 27 September 1979 (see 1978-79 edition for illustration of "air capable" design).

A/S weapons: The ASROC reload magazine is located under the launcher with the twin-cell launcher nacelles depressing to a vertical position. Capacity 24 rounds. 14 torpedoes carried for Mk 32 tubes.

Design: Extensive use of the modular concept is used to facilitate initial construction and block modernisation of the ships. The ships are highly automated, resulting in about 20 per cent reduction in personnel over a similar ship with conventional systems.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: These ships are the first large US warships to employ gas turbine propulsion. Each ship has four General Electric LM2500 marine gas turbine engines, a shaft-power version of the TF39 turbofan aircraft engine, and cp propellers, because gas turbine engines cannot use a reversible shaft. Fitted with advanced self-noise reduction features.
Three gas turbine generators each of 2 000 kW.

Fire control: Mk 116 digital underwater fire control system and one Mk 86 gunfire control system, one Mk 91 missile FCS.

LEFTWICH *5/1980, USN*

Gunnery: An improved 5-in/54 (Mk 65) gun is being considered for use in later ships of the class. The "Spruance" design can accommodate the 8-in Major Calibre Light-Weight Gun (MCLWG) (Mk 71). There were plans to install that weapon in DD 963, 965, 973, 974, 977, 985-7, 991 during each overhaul after 1980. This plan was cancelled in 1979 when it was decided not to produce this gun owing to its low priority and high price. 600 rounds per gun carried (5-in).

Helicopters. Full helicopter facilities are provided to accommodate the Light Airborne Multi-Purpose System (LAMPS), now the SH-2D helicopter. However, the ship can handle the larger SH-3 Sea King series.

Missiles: A new quadruple launcher for Harpoon or Tomahawk under trial in *Merrill*.
Tomahawk to be fitted in all ships.

Radar: Search: SPS 40 and SPS 55.
Fire control: SPG 60 and SPQ 9A.

Rockets: Mk 36 Chaffroc system is fitted in place of Mk 33.

Sonar: SQS 53 (bow-mounted).

Torpedoes: The triple Mk 32 torpedo tubes are inside the superstructure to facilitate maintenance and reloading; they are fired through side ports.

JOHN YOUNG

3/1980, Dr. Giorgio Arra

LEFTWICH

5/1980, USN

CARON

9/1980, J. L. M. van der Burgh

14 "FORREST SHERMAN" and "HULL" CLASSES: DESTROYERS (DD)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
FORREST SHERMAN	DD 931	Bath Iron Works, Bath, Maine	27 Oct 1953	5 Feb 1955	9 Nov 1955	AA
BIGELOW	DD 942	Bath Iron Works, Bath, Maine	6 July 1955	2 Feb 1957	8 Nov 1957	AA
MULLINNIX	DD 944	Bethlehem Steel Co, Quincy, Mass	5 Apr 1956	18 Mar 1957	7 Mar 1958	AA
HULL	DD 945	Bath Iron Works, Bath, Maine	12 Sep 1956	10 Aug 1957	3 July 1958	PA
EDSON	DD 946	Bath Iron Works, Bath, Maine	3 Dec 1956	1 Jan 1958	7 Nov 1958	NRF
TURNER JOY	DD 951	Puget Sound Bridge & Dry Dock Co	30 Sep 1957	5 May 1958	3 Aug 1959	PA
ANTI-SUBMARINE MODERNISATION						
BARRY	DD 933	Bath Iron Works, Bath, Maine	15 Mar 1954	1 Oct 1955	31 Aug 1956	AA
DAVIS	DD 937	Bethlehem Steel Co, Quincy, Mass	1 Feb 1955	28 Mar 1956	28 Feb 1957	AA
JONAS INGRAM	DD 938	Bethlehem Steel Co, Quincy, Mass	15 June 1955	8 July 1956	19 July 1957	AA
MANLEY	DD 940	Bath Iron Works, Bath, Maine	10 Feb 1955	12 Apr 1956	1 Feb 1957	AA
DUPONT	DD 941	Bath Iron Works, Bath, Maine	11 May 1955	8 Sep 1956	1 July 1957	AA
BLANDY	DD 943	Bethlehem Steel Co, Quincy, Mass	29 Dec 1955	19 Dec 1956	26 Nov 1957	AA
MORTON	DD 948	Ingalls Shipbuilding Corporation	4 Mar 1957	23 May 1958	26 May 1959	PA
RICHARD S. EDWARDS	DD 950	Puget Sound Bridge & Dry Dock Co	20 Dec 1956	24 Sep 1957	5 Feb 1959	PA

Displacement, tons: 2 800/3 000 standard; 3 960/4 200 full load
Dimensions, feet (metres): 418 × 45 × 23 *(127·4 × 13·7 × 7)*
Guns: A/S Mod; 2—5 in *(127 mm)*/54 (single Mk 42)
Others; 3—5 in *(127 mm)*/54 (single Mk 42);
A/S weapons: 2 triple torpedo tubes (Mk 32);
1 ASROC 8-tube launcher in A/S modified ships
Main engines: 2 geared turbines (Westinghouse in DD 931, 933, 937 and 938; General Electric in others); 70 000 shp; 2 shafts
Boilers: 4 Babcock & Wilcox (Foster-Wheeler in DD 937, 938, 940-942)
Speed, knots: 33 knots
Oil fuel, tons: 750
Range, miles: 4 500 at 20 knots
Complement: 292 (17 officers, 275 enlisted men) in unmodified ships; 304 in A/S Mod ships (17 officers, 287 enlisted men)

These ships were the first US destroyers of post-World War II design and construction to be completed with the DD designation. Four have been converted to a guided missile configuration (DDGs) and are listed separately. They were authorised in the FY 1952-56 new construction programmes. These ships each cost approximately $26 million.
Edson was assigned to the NRF on 1 April 1977 for employment as school ship for engine-room training and for reservist training at Newport, Rhode Island.

Armament: As built all 18 ships of this class had three single 5-in guns, two twin 3-in mounts, four fixed 21-in ASW torpedo tubes (amidships); two ASW Hedgehogs (forward of bridge), and depth charge racks.

Design: The entire superstructure of these ships is of aluminium to obtain maximum stability with minimum displacement. All living spaces are air conditiond. *Davis* and later ships have higher bows; *Hull* and later ships have slightly different bow designs. *Barry* had her sonar dome moved forward in 1959 and a stern anchor fitted.

Electronics: Several of the unmodified ships have elaborate electronic warfare antennas on the main mast.
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: One Mk 56 and one Mk 68 GFCS, one Mk 114 ASW FCS (except in DD 944 which has Mk 105 and DD 931, 945, 946 and 951 which have no ASW FCS), one Mk 5 target designation system.

Gunnery: With original armament of one 5-in mount forward and two 5-in mounts aft, these were the first US warships with more firepower aft than forward. Note that *Barry* and later ships have their Mk 68 gunfire control director forward and Mk 56 director aft; positions reversed in earlier ships.
During 1974-75 *Hull* was fitted with an 8-in gun forward to determine feasibility of installing a Major Calibre Light Weight Gun (MCLWG) in destroyer-type ships for shore bombardment. Forward 5-in gun removed. The 8-in gun was removed in February 1979 as plans to produce the gun for general use had been cancelled due to cost.

Modernisation: Eight ships of this class were extensively modified in 1967-71 to improve their anti-submarine capabilities: *Barry, Davis, Du Pont* at the Boston Naval Shipyard; *Jonas Ingram, Manley, Blandy* at the Philadelphia Naval Shipyard; and *Morton, Richard S. Edwards* at the Long Beach (California) Naval Shipyard. During modernisation the anti-submarine torpedo tubes installed forward of bridge (on 01 level), deckhouse aft of second funnel extended to full width of ship, ASROC launcher installed in place of after gun mounts on 01 level, and variable depth sonar fitted at stern. Six ships of this class were not modernised because of increased costs.

Radar: Search: SPS 10, 37 or 40.
Fire control: One SPG 53A.

Sonar: SQS 23 (bow-mounted in *Barry*, the first US ship so fitted).
VDS in ASW ships.

DUPONT (ASW modernisation) *9/1978, USN (PH1 A. C. Matthews)*

TURNER JOY *8/1980, Dr. Giorgio Arra*

MORTON (ASW modernisation) *2/1979, Dr. Giorgio Arra*

7 "GEARING (FRAM I)" CLASS: DESTROYERS (DD)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
WILLIAM C. LAWE	DD 763	Bethlehem, San Francisco	12 Mar 1944	21 May 1945	18 Dec 1946	NRF
McKEAN	DD 784	Todd Pacific Shipyards	15 Sep 1944	31 Mar 1945	9 June 1945	NRF
VOGELGESANG	DD 862	Bethlehem, Staten Island	3 Aug 1944	15 Jan 1945	28 Apr 1945	NRF
STEINAKER	DD 863	Bethlehem, Staten Island	1 Sep 1944	13 Feb 1945	26 May 1945	NRF
HAROLD J. ELLISON	DD 864	Bethlehem, Staten Island	3 Oct 1944	14 Mar 1945	23 June 1945	NRF
CONE	DD 866	Bethlehem, Staten Island	30 Nov 1944	10 May 1945	18 Aug 1945	NRF
ORLECK	DD 886	Consolidated Steel Corporation	28 Nov 1944	12 May 1945	15 Sep 1945	NRF

Displacement, tons: 2 425 standard; 3 480 to 3 520 full load
Dimensions, feet (metres): 390·5 × 41·2 × 19
(119 × 12·6 × 5·8)
Guns: 4—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines (General Electric);
60 000 shp; 2 shafts
Boilers: 4 (Babcock & Wilcox)
Speed, knots: 32·5
Range, miles: 5 800 at 15 knots
Complement: 307 (12 officers, 176 enlisted active duty; 7 officers, 112 enlisted reserve)

The US Navy survivors of 95 of this class completed in the USA during World War II.
One of two similar ships completed to a modified design after World War II listed separately as the "Carpenter" class.
All ships are assigned to Naval Reserve training and are manned by composite active duty-reserve crews.

Armament/Design: As built, these ships had a pole mast and carried an armament of six 5-in guns (twin mounts), 12—40 mm guns (2 quad, 2 twin), 11—20 mm guns (single), and ten 21-in torpedo tubes (quin). After World War II, the after bank of tubes was replaced by an additional quad 40 mm mount. All 40 mm and 20 mm guns were replaced subsequently by six 3-in guns (2 twin, 2 single) and a tripod mast was installed to support heavier radar antennae. The 3-in guns and remaining anti-ship torpedo tubes were removed during FRAM modernisation.

Electronics: Electronic warfare equipment fitted to most ships.

VOGELGESANG *1980, L. and L. van Ginderen*

Fire control: Single Mk 37 gunfire control system, Mk 114 ASW FCS (Mk 111 in DD 763) and Mk 5 target designation system.

Helicopters: Fitted to operate the Drone Anti-Submarine Helicopter (DASH) during FRAM modernisation—never carried.

Modernisation: All of these ships underwent extensive modernisation under the Fleet Rehabilitation and Modernisation (FRAM I) programme between 1961 and 1965.
There were two basic FRAM I configurations: some ships had twin 5-in mounts in "A" and "B" positions and Mk 32 torpedo launchers abaft second funnel; others have twin 5-in mounts in "A" and "Y" positions and Mk 32 launchers on 01 level in "B" position.

Radar: SPS 10, 37 or 40.

Sonar: SQS 23.

Transfers: Ships of this class serve with Argentina, Brazil, Ecuador, Greece, South Korea, Pakistan, Spain, Taiwan and Turkey.

1 "CARPENTER (FRAM I)" CLASS: DESTROYER (DD)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
ROBERT A. OWENS	DD 827	Bath Iron Works Corporation	29 Oct 1945	15 July 1946	5 Nov 1949	NRF

Displacement, tons: 2 425 standard; 3 540 full load
Dimensions, feet (metres): 390·5 × 41 × 20·9
(119 × 12·5 × 6·4)
Guns: 2—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 2 geared turbines (General Electric)
60 000 shp; 2 shafts
Boilers: 4 (Babcock & Wilcox)
Speed, knots: 33
Complement: 282 (12 officers, 176 enlisted active duty; 8 officers, 86 enlisted reserve)

Laid down as part of the "Gearing" class. Construction was suspended after World War II until 1947 when she was towed to the Newport News Shipbuilding and Dry Dock Co for completion as DDK. As specialised ASW ship mounted 3-in *(76 mm)* guns in place of 5-in mounts and was armed with improved ahead-firing anti-submarine weapons (Hedgehogs and Weapon Able/Alfa); special sonar equipment installed. The DDK and DDE classifications were merged in 1950 with this ship being designated DDE on 4 March 1950. Upon being modernised to the FRAM I configuration reclassified DD on 30 June 1962.
Assigned to Naval Reserve training; manned by composite active duty and reserve crews.

Electronics: Electronic warfare antennae fitted on a smaller tripod mast forward of the second funnel.

Fire control: One Mk 56 gunfire control system, one Mk 114 ASW FCS, Mk 1 target designation system.

Radar: Search: SPS 10 and 40.
Fire control: One SPG 35.

Sonar: SQS 23.

ROBERT A. OWENS *6/1980, L. and L. van Ginderen*

NAVAL RESERVE FORCE TRAINING SHIPS

Name/Hull No.	*NRF Homeport*	*Date of Assignment*	*Remarks*
WILLIAM C. LAWE (DD 763)	New Orleans, La	31 Aug 1973	Replaced *Putnam* (DD 757)
McKEAN (DD 784)	Seattle, Wash	1 Oct 1975	Replaced *Epperson* (DD 719)
ROBERT A. OWENS (DD 827)	Pensacola, Fla	15 June 1977	—
VOGELGESANG (DD 862)	Newport, RI	1 Mar 1974	—
STEINAKER (DD 863)	Baltimore, Md	2 July 1973	Replaced *Allan M. Sumner* (DD 692)
HAROLD J. ELLISON (DD 864)	Philadelphia, Pa	30 Nov 1974	Replaced *Robert L. Wilson* (DD 847)
CONE (DD 866)	Charleston, SC	31 Aug 1973	Replaced *Strong* (DD 758)
ORLECK (DD 886)	Tacoma, Wash	1 Oct 1973	Replaced *Brinkley Bass* (DD 887)
EDSON (DD 946)	Newport, RI	1 Apr 1977	Replaced *Holder* (DD 819)
GRAY (FF 1054)	—	—	—
LANG (FF 1061)	—	—	—
MILLER (FF 1091)	—	—	—
VALDEZ (FF 1096)	—	—	—

FRIGATES

There are 74 frigates (FF/FFG) in commission with another 30 ships planned for completion during the next few years. All ships now in commission have the large SQS 26 sonar (except "FFG 7" class), ASROC anti-submarine rockets, and a helicopter capability. However, only 15 have a surface-to-air missile capability for limited area defence. The ships of the "Oliver Hazard Perry" class (FFG 7) will have the smaller SQS 56 sonar. The ASROC was deleted but the ships will be able to operate two LAMPS 3 (Light Airborne Multi-Purpose System) helicopters and have a surface-to-air/surface-to-surface missile capability. The "Perry" class ships will be more versatile than the previous "Knox" class frigates and several other navies have expressed interest in the newer design. The Royal Australian Navy has ordered four of the ships and three more are to be built in Spain.

The US Navy's frigates could be supplemented in the ocean escort role by the 12 "Hamilton" class high-endurance cutters operated by the Coast Guard. The Coast Guard ships are fitted with sonar and are armed with Mk 32 torpedo tubes (as well as a single 5-in gun). They also have facilities for operating a large helicopter.

Future Programmes: In the FY 1984 programme it is planned to request funds to construct the first of a new class of frigates. Tentatively called the FFX, characteristics of the class are not yet available. The FFX would be intended primarily for the Naval Reserves. The ship will be less costly than the "Oliver Hazard Perry" class, but capable of fulfilling naval requirements such as convoy protection in low threat areas. Two additional ships are planned for the FY 1985 programme with more to follow, although the future of frigate design is still undecided.

9 + 30 + (7) "OLIVER HAZARD PERRY" CLASS: GUIDED MISSILE FRIGATES (FFG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
OLIVER HAZARD PERRY	FFG 7 (ex-PF 109)	Bath Iron Works, Bath, Maine	12 June 1975	25 Sep 1976	17 Dec 1977	AA
McINERNEY	FFG 8	Bath Iron Works, Bath, Maine	7 Nov 1977	4 Nov 1978	19 Nov 1979	AA
WADSWORTH	FFG 9	Todd Shipyards Corporation, San Pedro	13 July 1977	29 July 1978	28 Feb 1980	PA
DUNCAN	FFG 10	Todd Shipyards Corporation, Seattle	29 Apr 1977	1 Mar 1978	15 May 1980	PA
CLARK	FFG 11	Bath Iron Works, Bath, Maine	17 July 1978	24 Mar 1979	9 May 1980	AA
GEORGE PHILIP	FFG 12	Todd Shipyards Corporation, San Pedro	14 Dec 1977	16 Dec 1978	10 Oct 1980	PA
SAMUEL ELIOT MORISON	FFG 13	Bath Iron Works, Bath, Maine	4 Dec 1978	14 July 1979	11 Oct 1980	AA
SIDES	FFG 14	Todd Shipyards Corporation, San Pedro	7 Aug 1978	19 May 1979	1981	Bldg
ESTOCIN	FFG 15	Bath Iron Works, Bath, Maine	2 Apr 1979	3 Nov 1979	10 Jan 1981	AA
CLIFTON SPRAGUE	FFG 16	Bath Iron Works, Bath, Maine	30 Sep 1979	16 Feb 1980	21 Mar 1981	AA
JOHN A. MOORE	FFG 19	Todd Shipyards Corporation, San Pedro	19 Dec 1978	20 Oct 1979	1981	Bldg
ANTRIM	FFG 20	Todd Shipyards Corporation, Seattle	21 June 1978	27 Mar 1979	1981	Bldg
FLATLEY	FFG 21	Bath Iron Works, Bath, Maine	13 Nov 1979	15 May 1980	1981	Bldg
FAHRION	FFG 22	Todd Shipyards Corporation, Seattle	1 Dec 1978	24 Aug 1979	1981	Bldg
LEWIS B. PULLER	FFG 23	Todd Shipyards Corporation, San Pedro	23 May 1979	29 Mar 1980	1981	Bldg
JACK WILLIAMS	FFG 24	Bath Iron Works, Bath, Maine	25 Feb 1980	30 Aug 1980	1981	Bldg
COPELAND	FFG 25	Todd Shipyards Corporation, San Pedro	24 Oct 1979	26 July 1980	1982	Bldg
GALLERY	FFG 26	Bath Iron Works, Bath, Maine	17 May 1980	20 Dec 1980	1981	Bldg
MAHLON S. TISDALE	FFG 27	Todd Shipyards Corporation, San Pedro	19 Mar 1980	7 Feb 1981	1982	Bldg
BOONE	FFG 28	Todd Shipyards Corporation, Seattle	27 Mar 1979	16 Jan 1980	1982	Bldg
STEPHEN W. GROVES	FFG 29	Bath Iron Works, Bath, Maine	16 Sep 1980	1981	1982	Bldg
REID	FFG 30	Todd Shipyards Corporation, San Pedro	8 Oct 1980	1981	1982	Bldg
STARK	FFG 31	Todd Shipyards Corporation, Seattle	24 Aug 1979	30 May 1980	1982	Bldg
JOHN L. HALL	FFG 32	Bath Iron Works, Bath, Maine	1981	1981	1982	Ord
JARRETT	FFG 33	Todd Shipyards Corporation, San Pedro	1981	1981	1983	Ord
AUBREY FITCH	FFG 34	Bath Iron Works, Bath, Maine	1981	1981	1982	Ord
UNDERWOOD	FFG 36	Bath Iron Works, Bath, Maine	1981	1982	1983	Ord
CROMMELIN	FFG 37	Todd Shipyards Corporation, Seattle	30 May 1980	1981	1983	Bldg
CURTS	FFG 38	Todd Shipyards Corporation, San Pedro	1981	1982	1983	Ord
—	FFG 39	Bath Iron Works, Bath, Maine	1981	1982	1983	Ord
HALYBURTON	FFG 40	Todd Shipyards Corporation, Seattle	26 Sep 1980	1981	1982	Bldg
—	FFG 41	Todd Shipyards Corporation, San Pedro	1981	1982	1983	Ord
—	FFG 42	Bath Iron Works, Bath, Maine	1982	1982	1983	Ord
—	FFG 43	Todd Shipyards Corporation, San Pedro	1982	1982	1984	Ord
—	FFG 45	Bath Iron Works, Bath, Maine	1982	1983	1983	Ord
—	FFG 46	Todd Shipyards Corporation, San Pedro	1982	1983	1984	Ord
—	FFG 47	Bath Iron Works, Bath, Maine	1982	1983	1984	Ord
—	FFG 48	Todd Shipyards Corporation, Seattle	1981	1982	1984	Ord
—	FFG 49	Bath Iron Works, Bath, Maine	1983	1983	1984	Ord
Six ships	FFG 50-55	Approved FY 1981 programme	—	—	—	Auth
One ship	FFG 56	Requested FY 1982 programme	—	—	—	Proj

Displacement, tons: 3 605 full load
Dimensions, feet (metres): 445 × 45 × 24·5 (sonar); 14·8 (keel) *(135·6 × 13·7 × 5·7; 4·5)* (FFG 8 length 453 *(138·1)*)
Aircraft: 2 SH-2 LAMPS helicopters (see *Aircraft* note)
Missiles: SSM/SAM: Harpoon/Standard (1 single Mk 13 launcher) (see *Missile* note)
Guns: 1—76 mm/62 (Mk 75); 1—20 mm CIWS Mk 15 Phalanx (in FFG 8, 11 and 13) (see *Gunnery* note)
A/S weapons: 2 triple torpedo tubes (Mk 32)
Main engines: 2—LM 2500 gas turbines (General Electric); 41 000 shp; 1 shaft (cp propeller)
Speed, knots: 29
Range, miles: 4 500 at 20 knots
Complement: 164 (11 officers, 153 enlisted men)

They are follow-on ships to the large number of frigates (formerly DE) built in the 1960s and early 1970s, with the later ships emphasising anti-ship/aircraft/missile capabilities while the previous classes were oriented primarily against submarines (eg, larger SQS 26 sonar and ASROC).

The lead ship (FFG 7) was authorised in the FY 1973 shipbuilding programme, three ships (FFG 8-10) in the FY 1975 programme; and six ships (FFG 11-16) in the FY 1976 programme. Congress authorised nine ships in the FY 1976, but cost escalation permitted the construction of only six ships; eight ships in the FY 1977 (FFG 19-26); eight ships in the FY 1978 (FFG 27-34), eight ships in the FY 1979 (FFG 36-43), five ships in FY 1980 (FFG 45-49) and six ships in FY 1981 (FFG 50-55).

The four additional ships of this class ordered from the Todd-Seattle shipyard for the Royal Australian Navy were assigned US Navy hull numbers FFG 17, 18, 35 and 44 for accounting purposes. FFG 44 was approved in FY 1980 for the US Navy but transferred to the Australian account to be HMAS *Darwin* F 04. In addition to the Australian ships, three other ships (with no US Navy hull numbers assigned) are to be built for Spain in El Ferrol.

Aircraft: LAMPS 3 is scheduled to enter service about 1985. Starting in FY 1985 FFG 7-34 (excluding FFG 17 and 18) will be retro-fitted to support LAMPS 3 which includes the installation of the Rapid Hauldown and Traversing System (RAST) which is equipment designed for safe helicopter operations in high seas. To accommodate these modifications, the overall length of the ship is increased by 8 ft *(2·4 m)*. This will be done by increasing the angle of the ships transom, between the waterline and the fantail, from virtually straight up to a 45 degree angle outwards. This action increases the overall length of the ship, but not the waterline length. *McInerney* (FFG 8) was modified as LAMPS 3 test ship, at Bath Iron Works, in late 1980. At the same time the SQR 19 (TACTAS) sonar will be fitted on FFG 7-34. The entire retro-fit will cost $13 million (1979$) per ship. LAMPS 3 support facilities, RAST and the TACTAS sonar will be fitted in all ships authorised from FY 1979 onwards, during construction.

Classification: These ships were originally classified as "patrol frigates" (PF) at a time when the term "frigate" was used in the US Navy for the DL/DLG/DLGN. *Oliver Hazard Perry* was designated PF 109 at time of keel laying and designated FFG 7 on 30 June 1975.

The name of FFG 13 was changed from *Samuel E. Morison* to *Samuel Eliot Morison* on 17 August 1979.

Design: These ships are slightly longer but lighter than the earlier "Knox" class. The original single hangar has been changed to two adjacent hangars, each to house an SH-2 or follow-on LAMPS helicopters.

Several weapon and sensor systems for this class were evaluated at sea in the guided missile frigate *Talbot* (FFG 4). Fin stabilisers may be fitted at a later date (space and weight reserved).

Electronics: Fitted with two OE-82 satellite communications antennae, SSR-1 receiver and WSC-3 transceiver.

Engineering: Two auxiliary retractable propeller pods are provided aft of the sonar dome to improve berthing capability and to provide "get home" power in the event of a casualty to the main engines or propeller shaft. Each pod has a 325 hp engine to provide a maximum speed of 10 knots.

Fire control: The Mk 92 weapons control system is installed with a dome-shaped antenna atop the bridge. (The Mk 92 is the Americanised version of the WM-28 system developed by NV Hollandse Signaalapparaten). Mk 13 weapon direction system.

Fiscal: The design-to-cost estimate of $45·7 million in the FY 1973 dollars based on a 49-ship programme has increased to $55·3 million in the same dollars due to design and cost estimating changes. However, adding the estimated inflation and contract escalation factors brings the estimated cost per ship in the FY 1980 programme to $200·6 million.

The last ship of this class (FFG 56) is expected to cost $498·9 million (FY 1982 budget prices).

Gunnery: The principal gun on this class is the single 76 mm OTO Melara with a 90-round-per-minute firing rate (designated Mk 75 in US service). Space and weight are reserved for one 20 mm Phalanx Mk 15 CIWS aft on top of hangar. Next ships to be fitted are FFG 27-31.

Missiles: The single-arm missile launcher is capable of firing both Standard MR surface-to-air, Harpoon surface-to-surface missiles and Tomahawk cruise missiles. "Mixed" missile magazines provided for 40 Harpoon/Standard.

Radar: Long-range search: SPS 49.
Search and navigation: SPS 55.
Weapons control: STIR (modified SPG 60).

Rockets: Mk 36 Chaffroc RBOC launcher fitted.

Sonar: SQS 56 (hull-mounted).
To be fitted with SQR 19 TACTAS starting in mid-1980s.

OLIVER HAZARD PERRY

12/1977, USN

SAMUEL ELIOT MORISON

8/1980, Samuel L. Morison

McINERNEY (with extended transom)

6/1980

6 "BROOKE" CLASS: GUIDED MISSILE FRIGATES (FFG)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
BROOKE	FFG 1	Lockheed S.B. & Construction Co	10 Dec 1962	19 July 1963	12 Mar 1966	PA
RAMSEY	FFG 2	Lockheed S.B. & Construction Co	4 Feb 1963	15 Oct 1963	3 June 1967	PA
SCHOFIELD	FFG 3	Lockheed S.B. & Construction Co	15 Apr 1963	7 Dec 1963	11 May 1968	PA
TALBOT	FFG 4	Bath Iron Works, Bath, Maine	4 May 1964	6 Jan 1966	22 Apr 1967	AA
RICHARD L. PAGE	FFG 5	Bath Iron Works, Bath, Maine	4 Jan 1965	4 Apr 1966	5 Aug 1967	AA
JULIUS A. FURER	FFG 6	Bath Iron Works, Bath, Maine	12 July 1965	22 July 1966	11 Nov 1967	AA

Displacement, tons: 2 640 standard; 3 426 full load
Dimensions, feet (metres): 414·5 × 44·2 × 24·2 (sonar); 15 (keel) *(126·3 × 13·5 × 7·4; 4·6)*
Aircraft: 1 SH-2D LAMPS helicopter
Missiles: SAM; Tartar/Standard MR (1 single Mk 22 launcher)
Gun: 1—5 in *(127 mm)*/38 (Mk 30)
A/S weapons: 1 ASROC 8-tube launcher; 2 triple torpedo tubes (Mk 32)
Main engines: 1 geared turbine (Westinghouse in FFG 1-3, General Electric in others); 35 000 shp; 1 shaft
Boilers: 2 (Foster-Wheeler)
Speed, knots: 27·2
Complement: 248 (17 officers, 231 enlisted men)

These ships are identical to the "Garcia" class frigates except for the Tartar missile system in lieu of a second 5-in gun mount and different electronic equipment. Authorised as DEG 1-3 in the FY 1962 new construction programme and DEG 4-6 in the FY 1963 programme. Plans for ten additional DEGs in the FY 1964 and possibly three more DEGs in a later programme were dropped because of the $11 million additional cost of a DEG over FF. In 1974-75 *Talbot* was reconfigured as test and evaluation ship for systems being developed for the "Oliver Hazard Perry" class (FFG 7) frigates and "Pegasus" class (PHM 1) hydrofoil missile combatants, but returned to original state in 1976-77.

Classification: Reclassified as FFG 1-6 on 30 June 1975.

Fire control: One Mk 74 MFCS, one Mk 56 GFCS, one Mk 114 ASW FCS, one Mk 4 weapon direction system.

Helicopters: These ships were designed to operate Drone Anti-Submarine Helicopters (DASH), but the programme was cut back before helicopters were provided. They were fitted to operate the Light Airborne Multi-Purpose System (LAMPS), currently the SH-2D helicopter during 1972-75 refits.

Missiles: These ships have a single Tartar Mk 22 launching system which weighs 92 395 lb. Reportedly, the system has a rate of fire similar to the larger Mk 11 and Mk 13 systems installed in guided missile destroyers, but the FFG system has a considerably smaller magazine capacity (16 missiles according to unofficial sources).
FFG 4-6 have automatic ASROC loading system.

Radar: 3D search: SPS 52.
Search: SPS 10.
Missile control: SPG 51C.
Gun control: SPG 35.

Rockets: Mk 33 Chaffroc RBOC. Mk 36 to replace Mk 33 in FFG 1 and 3.

Sonar: SQS 26 AX (bow-mounted).
(SQS 56 evaluated in *Talbot*).

RAMSEY — *9/1979, Dr. Giorgio Arra*

SCHOFIELD — *1/1980, Dr. Giorgio Arra*

BROOKE — *4/1979, Dr. Giorgio Arra*

46 "KNOX" CLASS: FRIGATES (FF)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
KNOX	FF 1052	Todd Shipyards, Seattle	5 Oct 1965	19 Nov 1966	12 Apr 1969	PA
ROARK	FF 1053	Todd Shipyards, Seattle	2 Feb 1966	24 Apr 1967	22 Nov 1969	PA
GRAY	FF 1054	Todd Shipyards, Seattle	19 Nov 1966	3 Nov 1967	4 Apr 1970	NRF
HEPBURN	FF 1055	Todd Shipyards, San Pedro	1 June 1966	25 Mar 1967	3 July 1969	PA
CONNOLE	FF 1056	Avondale Shipyards	23 Mar 1967	20 July 1968	30 Aug 1969	AA
RATHBURNE	FF 1057	Lockheed S.B. & Construction Co	8 Jan 1968	2 May 1969	16 May 1970	PA
MEYERKORD	FF 1058	Todd Shipyards, San Pedro	1 Sep 1966	15 July 1967	28 Nov 1969	PA
W. S. SIMS	FF 1059	Avondale Shipyards	10 Apr 1967	4 Jan 1969	3 Jan 1970	AA
LANG	FF 1060	Todd Shipyards, San Pedro	25 Mar 1967	17 Feb 1968	28 Mar 1970	NRF
PATTERSON	FF 1061	Avondale Shipyards	12 Oct 1967	3 May 1969	14 Mar 1970	AA
WHIPPLE	FF 1062	Todd Shipyards, Seattle	24 Apr 1967	12 Apr 1968	22 Aug 1970	PA
REASONER	FF 1063	Lockheed S.B. & Construction Co	6 Jan 1969	1 Aug 1970	31 July 1971	PA
LOCKWOOD	FF 1064	Todd Shipyards, Seattle	3 Nov 1967	5 Sep 1968	5 Dec 1970	PA
STEIN	FF 1065	Lockheed S.B. & Construction Co	1 June 1970	19 Dec 1970	8 Jan 1972	PA
MARVIN SHIELDS	FF 1066	Todd Shipyards, Seattle	12 Apr 1968	23 Oct 1969	10 Apr 1971	PA
FRANCIS HAMMOND	FF 1067	Todd Shipyards, San Pedro	15 July 1967	11 May 1968	25 July 1970	PA
VREELAND	FF 1068	Avondale Shipyards	20 Mar 1968	14 June 1969	13 June 1970	AA
BAGLEY	FF 1069	Lockheed S.B. & Construction Co	22 Sep 1970	24 Apr 1971	6 May 1972	PA
DOWNES	FF 1070	Todd Shipyards, Seattle	5 Sep 1968	13 Dec 1969	28 Aug 1971	PA
BADGER	FF 1071	Todd Shipyards, Seattle	17 Feb 1968	7 Dec 1968	1 Dec 1970	PA
BLAKELY	FF 1072	Avondale Shipyards	3 June 1968	23 Aug 1969	18 July 1970	AA
ROBERT E. PEARY	FF 1073	Lockheed S.B. & Construction Co	20 Dec 1970	23 June 1971	23 Sep 1972	PA
HAROLD E. HOLT	FF 1074	Todd Shipyards, San Pedro	11 May 1968	3 May 1969	26 Mar 1971	PA
TRIPPE	FF 1075	Avondale Shipyards	29 July 1968	1 Nov 1969	19 Sep 1970	AA
FANNING	FF 1076	Todd Shipyards, San Pedro	7 Dec 1968	24 Jan 1970	23 July 1971	PA
OUELLET	FF 1077	Avondale Shipyards	15 Jan 1969	17 Jan 1970	12 Dec 1970	PA
JOSEPH HEWES	FF 1078	Avondale Shipyards	15 May 1969	7 Mar 1970	24 Apr 1971	AA
BOWEN	FF 1079	Avondale Shipyards	11 July 1969	2 May 1970	22 May 1971	AA
PAUL	FF 1080	Avondale Shipyards	12 Sep 1969	20 June 1970	14 Aug 1971	AA
AYLWIN	FF 1081	Avondale Shipyards	13 Nov 1969	29 Aug 1970	18 Sep 1971	AA
ELMER MONTGOMERY	FF 1082	Avondale Shipyards	23 Jan 1970	21 Nov 1970	30 Oct 1971	AA
COOK	FF 1083	Avondale Shipyards	20 Mar 1970	23 Jan 1971	18 Dec 1971	PA
McCANDLESS	FF 1084	Avondale Shipyards	4 June 1970	20 Mar 1971	18 Mar 1972	AA
DONALD B. BEARY	FF 1085	Avondale Shipyards	24 July 1970	22 May 1971	22 July 1972	AA
BREWTON	FF 1086	Avondale Shipyards	2 Oct 1970	24 July 1971	8 July 1972	PA
KIRK	FF 1087	Avondale Shipyards	4 Dec 1970	25 Sep 1971	9 Sep 1972	PA
BARBEY	FF 1088	Avondale Shipyards	5 Feb 1971	4 Dec 1971	11 Nov 1972	PA
JESSE L. BROWN	FF 1089	Avondale Shipyards	8 Apr 1971	18 Mar 1972	17 Feb 1973	AA
AINSWORTH	FF 1090	Avondale Shipyards	11 June 1971	15 Apr 1972	31 Mar 1973	AA
MILLER	FF 1091	Avondale Shipyards	6 Aug 1971	3 June 1972	30 June 1973	NRF
THOMAS C. HART	FF 1092	Avondale Shipyards	8 Oct 1971	12 Aug 1972	28 July 1973	AA
CAPODANNO	FF 1093	Avondale Shipyards	12 Oct 1971	21 Oct 1972	17 Nov 1973	AA
PHARRIS	FF 1094	Avondale Shipyards	11 Feb 1972	16 Dec 1972	26 Jan 1974	AA
TRUETT	FF 1095	Avondale Shipyards	27 Apr 1972	3 Feb 1973	1 June 1974	AA
VALDEZ	FF 1096	Avondale Shipyards	30 June 1972	24 Mar 1973	27 July 1974	NRF
MOINESTER	FF 1097	Avondale Shipyards	25 Aug 1972	12 May 1973	2 Nov 1974	AA

Displacement, tons: 3 011 standard; 3 877 (1052-1077) 4 200 (remainder) full load (see *Modification* note)
Dimensions, feet (metres): 438 × 46·8 × 24·8 (sonar); 15 (keel) *(133·5 × 14·3 × 7·8; 4·6)*
Aircraft: 1 SH-2 LAMPS helicopter
Missiles: SAM: 1 Sea Sparrow BPDMS multiple launcher (Mk 25) in 1052-1069 and 1071-1083; 1 NATO Sea Sparrow multiple launcher (Mk 29) in *Downes*;
SSM: 8 Harpoon (quads) in FF 1054-1062, 1066, 1067, 1069-1071, 1073, 1074, 1077, 1080-1086, 1088-1096 (see *Missile* note)
Gun: 1—5 in *(127 mm)*/54 (Mk 42)
A/S weapons: 1 ASROC 8-tube launcher; 4 fixed torpedo tubes (Mk 32)
Main engines: 1 geared turbine (Westinghouse) 35 000 shp; 1 shaft
Boilers: 2 Combustion Engineering (except FF 1056, 1057, 1061, 1063, 1065, 1072, 1073, 1075, 1077 which have Babcock & Wilcox)
Speed, knots: 27
Complement: 245 (17 officers, 228 enlisted men); increased to 283 (22 officers, 261 enlisted men) with BPDMS and LAMPS installation; (as built 12 ships had accommodation for 2 staff officers)

These ships are similar to the previous "Garcia" and "Brooke" classes, but slightly larger because of the use of non-pressure-fired boilers.
Although now classified as frigates they were authorised as DE 1052-1061 (ten ships) in the FY 1964 new construction programme, DE 1062-1077 (16 ships) in FY 1965, DE 1078-1087 (ten ships) in FY 1966, DE 1088-1097 (ten ships) in FY 1967, and DE 1098-1107 (ten ships) in FY 1968. However, construction of six ships (DE 1102-1107) was deferred in 1968 as US Navy emphasis shifted to the more versatile and faster ships; three additional ships (DE 1098-1100) were cancelled on 24 February 1969 to finance cost overruns of the FY 1968 nuclear-powered attack submarines and to comply with a Congressional mandate to reduce expenditures; the last ship of the FY 1968 programme (DE 1101) was cancelled on 9 April 1969.
The DEG 7-11 guided missile "frigates" constructed in Spain are similar to this design.
Gray (FF 1054), *Lang* (FF 1060), *Miller* (FF 1091) and *Valdez* (FF 1096) assigned to Naval Reserve Forces FY 1982. These are the first modern combatants so assigned.

Classification: Originally classified as ocean escorts (DE); reclassified as frigates (FF) on 30 June 1975.

Design: A 4 000 lb lightweight anchor is fitted on the port side and an 8 000 lb anchor fits into the after section of the sonar dome.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: DE 1101 was to have had gas turbine propulsion; construction of the ship was cancelled when decision was made to provide gas turbine propulsion in the "Spruance" class (DD 963) destroyers.
These ships can steam at 22 knots on one boiler. They have a single 5-blade, 15 ft diameter propeller.

Fire control: One Mk 68 gunfire control with SPG 53A radar, one Mk 115 MFCS, one Mk 114 ASW FCS and one Mk 1 target designation system.

MARVIN SHIELDS *6/1980, Dr. Giorgio Arra*

OUELLET (with new bow bulwarks) *3/1980, Dr. Giorgio Arra*

Fiscal: These ships have cost considerably more than originally estimated. Official programme cost for the 46 ships as of January 1974 was $1 424 million an average of $30 959 million per ship not including the LAMPS, Standard missile, VDS, or BPDMS installation.

Gunnery: All ships of the class are to be fitted with 20 mm Phalanx CIWS Mk 16 on the fantail. In those ships with Sea Sparrow the CIWS will replace it.

Helicopters: These ships were designed to operate the now-discarded DASH unmanned helicopter. From FY 1972 to FY 1976 they were modified to accommodate the Light Airborne Multi-Purpose System, the SH-2D anti-submarine helicopter; hangar and flight deck are enlarged. Cost approximately $1 million per ship for LAMPS modification.

Missiles: Sea Sparrow Basic Point Defence Missile System (BPDMS) launcher installed in 31 ships from 1971-75 (FF 1052-1069, 1071-1083).
Modified NATO Sea Sparrow installed in *Downes* for evaluation.
In addition, some ships are to be fitted with the Standard interim surface-to-surface missile which is fired from the ASROC launcher forward of the bridge. Two of the eight "cells" in the launcher are modified to fire a single Standard.
Cost was approximately $400 000 per ship for BPDMS and $750 000 for Standard missile modification.
Downes and *Lockwood* have been used in at-sea firing tests and shipboard compatability for the Harpoon ship-to-ship missiles.
Harpoon fitted in *Ainsworth* in August 1976 (first production model in US Navy). Being fitted in all other ships in immediate future.

Modifications: In 1979 a programme was initiated to fit 3·5 ft bow bulwarks and spray strakes to all ships of the class adding 9·1 tons to the displacement. By 1 August 1981 FF 1065, 1067, 1069, 1072, 1075, 1079, 1081, 1095 and 1097 had been fitted. The remainder will be fitted at their next overhaul.

Radar: Search: SPS 10 and 40.
(**Note:** *Downes* has SPS 58 threat detection radar, and Improved Point Defence/Target Acquisition System (IPD/TAS) radar).

Rockets: Mk 36 Chaffroc RBOC to be fitted in near future replacing Mk 33 system.

Sonar: SQS 26 CX (bow-mounted).
SQS 35 (Independent VDS) (except FF 1053-55, 1057-62, 1072 and 1077).
In FY 1980 funds were approved to retro-fit SQR 18A TACTAS towed array sonar in twelve "Knox" class ships. In FY 1981 programme funds were requested to retro-fit four more ships with SQR 18A. Nineteen more ships equipped with SQS 35 (IVDS) will be so fitted in the next few years. FF 1053-1055, 1057-62, 1072 and 1077 will not receive SQR 18A.

Torpedoes: Improved ASROC-torpedo reloading capability as in some ships of earlier "Garcia" class (note slanting face of bridge structure immediately behind ASROC). Four Mk 32 torpedo tubes are fixed in the midships structure, two to a side, angled out at 45 degrees. The arrangement provides improved loading capability over exposed triple Mk 32 torpedo tubes.

FRANCIS HAMMOND (new bow)

8/1980, Dr. Giorgio Arra

KIRK

9/1980, Dr. Giorgio Arra

OUELLET (new bow)

3/1980, Dr. Giorgio Arra

10 "GARCIA" CLASS: FRIGATES (FF)

Name	No.	Builders	Laid down	Launched	Commissioned	F/S
GARCIA	FF 1040	Bethlehem Steel, San Francisco	16 Oct 1962	31 Oct 1963	21 Dec 1964	AA
BRADLEY	FF 1041	Bethlehem Steel, San Francisco	17 Jan 1963	26 Mar 1964	15 May 1965	PA
EDWARD McDONNELL	FF 1043	Avondale Shipyards	1 Apr 1963	15 Feb 1964	15 Feb 1965	AA
BRUMBY	FF 1044	Avondale Shipyards	1 Aug 1963	6 June 1964	5 Aug 1965	AA
DAVIDSON	FF 1045	Avondale Shipyards	20 Sep 1963	2 Oct 1964	7 Dec 1965	PA
VOGE	FF 1047	Defoe Shipbuilding Co	21 Nov 1963	4 Feb 1965	25 Nov 1966	AA
SAMPLE	FF 1048	Lockheed S.B. & Construction Co	19 July 1963	28 Apr 1964	23 Mar 1968	PA
KOELSCH	FF 1049	Defoe Shipbuilding Co	19 Feb 1964	8 June 1965	10 June 1967	AA
ALBERT DAVID	FF 1050	Lockheed S.B. & Construction Co	29 Apr 1964	19 Dec 1964	19 Oct 1968	PA
O'CALLAHAN	FF 1051	Defoe Shipbuilding Co	19 Feb 1964	20 Oct 1965	13 July 1968	PA

Displacement, tons: 2 620 standard; 3 403 full load
Dimensions, feet (metres): 414·5 × 44·2 × 24 (sonar)
(126·3 × 13·5 × 7·3)
Aircraft: 1 SH-2D LAMPS helicopter (except *Sample* and *Albert David*)
Guns: 2—5 in *(127 mm)*/38 (single Mk 30)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32)
Main engines: 1 geared turbine (Westinghouse in 1040, 1041, 1043-1045; GE in others); 35 000 shp; 1 shaft
Boilers: 2 (Foster-Wheeler)
Speed, knots: 27·5
Complement: 239 (13 officers, 226 enlisted men) (1040, 1041, 1043, 1044)
247 (16 officers, 231 enlisted men) (remainder)

These ships exceed some of the world's destroyers in size and ASW capability, but are designated as frigates by virtue of their single propeller shaft and limited speed. The FF 1040 and FF 1041 were authorised in the FY 1961 new construction programme, FF 1043-1045 in FY 1962, and FF 1047-1051 in FY 1963.

Classification: Originally classified as ocean escorts (DE); reclassified as frigates (FF) on 30 June 1975. The hull numbers DE 1039, 1042, and 1046 were assigned to frigates built overseas for Portugal to US "Dealey" design.

Design: Anchors are mounted at stem and on portside, just forward of 5-in gun. Hangar structure of this class modified during the early 1970s to handle LAMPS except in *Sample* and *Albert David*.

Electronics: *Voge* and *Koelsch* are fitted with a specialised ASW Naval Tactical Data System (NTDS).
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: One Mk 56 gunfire control system, one Mk 114 ASW FCS and one Mk 1 target designation system.

Helicopters: The Drone Anti-Submarine Helicopter (DASH) programme was cut back before these ships were provided with helicopters. Reportedly only *Bradley* actually operated with DASH. All but two of these ships were fitted to operate the Light Airborne Multi-Purpose System (LAMPS), now the SH-2D helicopter between FY 1972-75.

Missiles: *Bradley* was fitted with a Sea Sparrow Basic Point Defense Missile System (BPDMS) in 1967-68; removed for installation in the carrier *Forrestal* (CV 59).

Radar: Search: SPS 10 and 40.
Fire control: SPG 35.

Sonar: SQS 26 AXR (bow-mounted) in FF 1040-1041, 1043-1045. SQS 26 BR (bow-mounted) in FF 1047-1051.

Torpedoes: Most of these ships were built with two Mk 25 torpedo tubes built into their transom for launching wire-guided ASW torpedoes. However, they have been removed from the earlier ships and deleted in the later ships. *Voge* and later ships have automatic ASROC reload system (note angled base of bridge structure behind ASROC in these ships).

BRUMBY *10/1979, L. and L. van Ginderen*

DAVIDSON *3/1979, Dr. Giorgio Arra*

O'CALLAHAN *6/1980, Dr. Giorgio Arra*

1 "GLOVER" CLASS: FRIGATE (FF)

Name	No.	Builders	Laid down	Launched	Commissioned	F.S
GLOVER	FF 1098 (ex-AGFF 1, ex-AGDE 1, ex-AG 163)	Bath Iron Works, Bath, Maine	29 July 1963	17 Apr 1965	13 Nov 1965	AA

Displacement, tons: 2 643 standard; 3 426 full load
Dimensions, feet (metres): 414·5 × 44·2 × 24 (sonar)
(126·3 × 13·5 × 7·3)
Gun: 1—5 in *(127 mm)*/38 (Mk 30)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32);
facilities for small helicopter
Main engines: 1 geared turbine (Westinghouse); 35 000 shp; 1 shaft
Boilers: 2 (Foster-Wheeler)
Speed, knots: 27
Complement: 248

The ship was originally authorised in the FY 1960 new construction programme, but was postponed and re-introduced in the FY 1961 programme. Estimated construction cost was $29·33 million.
Glover was built to test an advanced hull design and propulsion system. She was classed as an auxiliary but retained a full combat capability.
On 1 October 1979 *Glover* ceased her experimental role and assumed the status of a Frigate (FF). She will have capabilities updated by having facilities for LAMPS II installed and her electronic equipment modernised during her next overhaul.

Classification: *Glover* was originally classified as a miscellaneous auxiliary (AG 163); completed as an escort research ship (AGDE 1). Subsequently changed to frigate research ship (AGFF) on 30 June 1975 and reclassified as a regular frigate on 1 October 1979.

Design: *Glover* has a massive bow sonar dome integral with her hull and extending well forward underwater.

Electronics: The prototype sonar and equipment originally installed when she was an AGFF was removed in the summer of 1979.
Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Fire control: Mk 56 GFCS; one Mk 114 ASW FCS and one Mk 1 target designation system.

Radar: Search: SPS 10 and 40.
Fire control: SPG 35.

Sonar: Bow-mounted SQS 26 AXR active sonar, hull-mounted SQR 13 Passive/Active Detection and Location (PADLOC) sonar, and SQS 35 Independent Variable Depth Sonar (IVDS) lowered from the stern originally mounted.

GLOVER (old hull number as AGFF 1)

1974, USN

2 "BRONSTEIN" CLASS: FRIGATES (FF)

Name	No.	Builders	Laid down	Launched	Commissioned	F.S
BRONSTEIN	FF 1037	Avondale Shipyards	16 May 1961	31 Mar 1962	16 June 1963	PA
McCLOY	FF 1038	Avondale Shipyards	15 Sep 1961	9 June 1962	21 Oct 1963	AA

Displacement, tons: 2 360 standard; 2 650 full load
Dimensions, feet (metres): 371·5 × 40·5 × 23 (sonar)
(113·2 × 12·3 × 7)
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 1 ASROC 8-tube launcher;
2 triple torpedo tubes (Mk 32);
facilities for small helicopter
Main engines: 1 geared turbine (De Laval); 20 000 shp; 1 shaft
Boilers: 2 (Foster-Wheeler)
Speed, knots: 26
Complement: 196 (16 officers, 180 enlisted men)

These two ships may be considered the first of the "second generation" of post-World War II frigates which are comparable in size and ASW capabilities to conventional destroyers.
Bronstein and *McCloy* have several features such as hull design, large sonar and ASW weapons that subsequently were incorporated into the mass-produced "Garcia", "Brooke", and "Knox" classes.
Both ships were built under the FY 1960 new construction programme.

Classification: These ships were originally classified as ocean escorts (DE); reclassified as frigates (FF) on 30 June 1975.

Design: Position of stem anchor and portside anchor (just forward of gun mount) necessitated by large bow sonar dome.

As built, a single 3-in (Mk 34) open mount was aft of the helicopter deck; removed for installation of towed sonar.

Electronics: Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Fire control: One Mk 56 gunfire control system, one Mk 114 ASW FCS, Mk 1 target designation system.

Radar: Search: SPS 10 and 40.
Fire control: SPG 35.

Sonar: SQS 26 (bow-mounted).
TASS (Towed Array Surveillance System) installed mid-1970s.
Cable reel on quarterdeck.

BRONSTEIN

7/1975, USN

LIGHT FORCES

The US Navy's programme to construct a series of 30 hydrofoil missile ships has been sharply curtailed, with only six units now planned probably as a result of a 130 per cent increase in estimated unit costs. Designated "patrol combatant missile (hydrofoil)".
Initial problems in the pump, gearbox, and electrical system of the prototype PHM have been overcome.
PHMs will be operated as a tactical squadron to develop tactics and gain technical experience with this type of craft. For this purpose PHM Squadron 2 was commissioned 1 October 1980.
Several patrol and riverine warfare craft are operated by the Naval Reserve Force, and one new design (PB) is being developed for US and foreign use. US use of these craft will be minimal; rather they are intended to compete with contemporary small craft built overseas in the foreign sales market.

3 + 3 PATROL COMBATANTS MISSILE (HYDROFOILS) (PHM)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
PEGASUS	PHM 1	Boeing Co, Seattle	9 July 1977	AA
HERCULES	PHM 2	Boeing Co, Seattle	Mar 1982	Bldg
TAURUS	PHM 3	Boeing Co, Seattle	11 May 1981	AA
AQUILA	PHM 4	Boeing Co, Seattle	25 July 1981	AA
ARIES	PHM 5	Boeing Co, Seattle	1982	Bldg
GEMINI	PHM 6	Boeing Co, Seattle	Jan 1982	Bldg

Displacement, tons: 231 full load
Dimensions, feet (metres):
foils extended: 132·9 *(40·5)* oa × 28·2 *(8·6)* hull; 47·5 *(14·5)* over foils × 23·2 *(7·1)*
foils retracted: 145·3 *(44·3)* oa × 28·2 *(8·6)* hull × 7·5 *(2·3)*
Missiles: SSM; 8 Harpoon (quads)
Gun: 1—76 mm/62 (Mk 75)
Main engines: Foil borne; 1 gas turbine (General Electric LM 2500); 18 000 shp; Aerojet waterjet propulsion units = 48 knots
Hull borne; 2 MB 8V 331 TC80 diesels; 1 600 bhp; 2 waterjet propulsion units = 12 knots
Range, miles: 1 700 at 9 knots; 700 at 40 knots
Complement: 21 (4 officers, 17 enlisted men)

The PHM design was developed in conjunction with the Italian and West German navies in an effort to produce a small combatant that would be universally acceptable to NATO navies with minor modifications.
The US Navy plans to construct six ships of this class. *Pegasus* and *Hercules* were authorised in the FY 1973 R and D programme, and four additional ships in the FY 1975 shipbuilding programme. *Pegasus* was laid down on 10 May 1973 and launched on 9 November 1974 and made her first foil-borne trip on 25 February 1975. *Hercules* was laid down on 30 May 1974. Due to cost increases and inflation her construction was suspended in August 1975 when 40·9 per cent complete. Later *Hercules* was to be completed with funds from the FY 1976 shipbuilding programme, but a further re-examination of this programme led to the cancellation of all but *Pegasus* on 6 April 1977. *Pegasus* was to serve as a High Speed Test Vehicle. In August 1977, the Secretary of Defense released the $272·7 million appropriated to complete the six ship programme. Subsequently, a contract to rebuild *Hercules* (the original hull having been scrapped) and to construct PHM 3/6 was awarded to Boeing Co on 20 October 1977. All after *Pegasus* have been completely redesigned within original dimensions.
Pegasus was transferred from the Pacific to the Atlantic in July 1979. The others will be assigned to the Atlantic on commissioning.

Classification: The designation PHM originally was for Patrol Hydrofoil-Missile; reclassified Patrol Combatant Missile (Hydrofoil) on 30 June 1975.

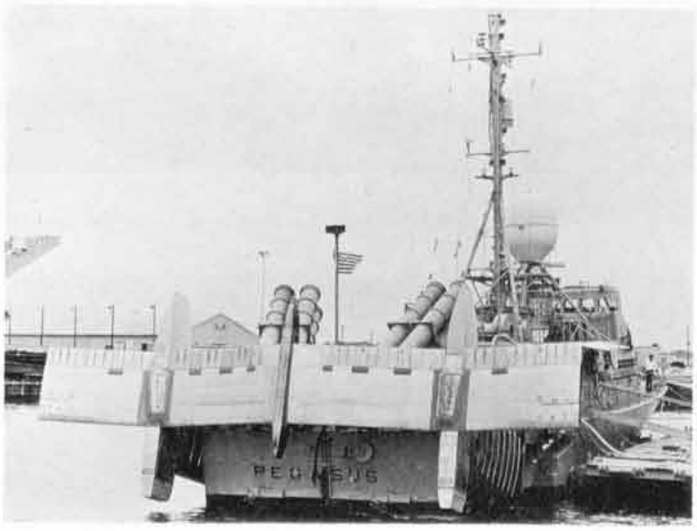
Fire control: Fitted with the Mk 92 fire control system in PHM 2-6 (Americanised version of the WM-28 radar and weapons control system developed by NV Hollandse Signaalapparaten) and Mk 94 in PHM 1.

Missiles: Craft will have two lightweight four-tube canister launchers. This is double the Harpoon armament originally planned.

Name: PHM 1 was originally named *Delphinus*—renamed 26 April 1974.

Radar: Navigation: SMA 3TM20-H2.

Rockets: Mk 34 Chaffroc being fitted.



PEGASUS *7/1979, Dr. Giorgio Arra*

PEGASUS *7/1979, Dr. Giorgio Arra*

4 "ASHEVILLE" CLASS: PATROL COMBATANTS (PG)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
TACOMA	PG 92	Tacoma Boatbuilding	14 July 1969	AA
WELCH	PG 93	Peterson Builders	8 Sep 1969	AA
BEACON	PG 99	Peterson Builders	21 Nov 1969	AR
GREEN BAY	PG 101	Peterson Builders	5 Dec 1969	AR

Displacement, tons: 225 standard; 235 full load
Dimensions, feet (metres): 164·5 × 23·8 × 9·5 *(50·1 × 7·3 × 2·9)*
Guns: 1—3 in *(76 mm)*/50 (single Mk 34); 1—40 mm (single Mk 10); 4—5 MGs (twin)
Main engines: CODOG: 2 diesels (Cummins); 1 450 shp; 2 shafts = 16 knots
1 gas turbine (General Electric LM 1500); 13 300 shp; 2 shafts = 40+ knots
Range, miles: 1 700 at 16 knots; 325 at 37 knots
Complement: 24 (3 officers, 21 enlisted men)

Originally a class of 17 patrol gunboats (PG ex-PGM) designed to perform patrol, blockade, surveillance, and support missions. No anti-submarine capability. Requirement for these craft was based on the volatile Cuban situation in the early 1960s.
Authorised in the FY 1966 programme. Ships took approximately 18 months from keel laying to completion. Cost per ship approximately $5 million.
Tacoma and *Welch* are at Little Creek, Virginia and due to decommission 30 September 1981. *Beacon* and *Green Bay* were decommissioned at Little Creek, Virginia on 1 April 1977. All 17 of this class still exist, some with other Government agencies or foreign navies (see *Deletion* list).

Classification: These ships were originally classified as motor gunboats (PGM); reclassified as patrol boats (PG) with same hull numbers on 1 April 1967 and as Patrol Combatants (PG) on 30 June 1975.

Design: All aluminium hull and aluminium-fibreglass superstructure. Because of the heat-transmitting qualities of the aluminium hull and the amount of waste heat produced by a gas turbine engine the ships are completely air conditioned.

Engineering: The transfer from diesel to gas turbine propulsion (or vice versa) can be accomplished while under way with no loss of speed. From full stop these ships can attain 40 knots in one minute; manoeuvrability is excellent due in part to cp propellers.

Fire control: Mk 63 Gunfire Control System with SPG 50 fire control radar.

Gunnery: 3-in (Mk 34) gun forward in closed mount with 40 mm (Mk 3) gun in open mount aft.

Missiles: *Benicia* (PG 96) was experimentally fitted with a single launcher aft for the Standard interim anti-ship missile in 1971; removed prior to transfer to South Korea later that year.

TACOMA *5/1980, USN (Cdr. Joe Mancias)*

1 "HIGH POINT" CLASS: PATROL CRAFT (HYDROFOIL) (PCH)

Name	*No.*	*Builders*	*In Service*	*FIS*
HIGH POINT	PCH 1	Boeing Co, Seattle	15 Aug 1963	PSA

Displacement, tons: 110 full load
Dimensions, feet (metres): 115 × 31 × 6 *(35 × 9·4 × 1·8)* (foils retracted) or 17 *(5·2)* (foils extended)
Guns: Removed
A/S weapons: Removed
Main engines: Foil borne; 2 gas turbines (Bristol Siddeley Marine Proteus); 6 200 shp; 2 paired counter-rotating propellers = 48 knots
Hull borne; diesel (Packard); 600 bhp; retractable outdrive with 1 propeller = 12 knots
Complement: 13 (1 officer, 12 enlisted men)

Experimental craft authorised under the FY 1960 programme. Built at Martinac Boatyard, Tacoma. Laid down 27 February 1961, launched 17 August 1962. During March 1975 *High Point* was evaluated by the Coast Guard. *High Point* was due to be deleted on 30 September 1978. However Congress provided additional funds in the FY 1979 budget despite there being no request from the Defense Department to retain her in service. Currently based at Bremerton where she is used for research and development.

Design: *High Point*'s forward foil is supported by a single strut and the after foil by twin struts. Twin underwater nacelles at the junction of the vertical struts and main foil housed contra-rotating, super-cavitating propellers for foil-borne propulsion. After foils modified in 1973 and nacelles repositioned to improve performance in heavy sea states. Also, forward foil strut made steerable to improve manoeuvrability.

Gunnery: A single 40 mm gun was mounted forward in 1968; subsequently removed.

Missiles: During 1973-74 *High Point* was employed as a test ship for the lightweight canister launchers for the Harpoon surface-to-surface missile intended for the PHM.

HIGH POINT *1974, McDonnell Douglas*

19 PATROL BOATS—Mk I (2) and III (17) Series (PB)

Displacement, tons: Mk I: 26·9 light; 36·3 full load. Mk III: 31·5 light; 41·25 full load
Dimensions, feet (metres): Mk I: 65 × 16 × 4·9 *(19·8 × 4·9 × 1·5)*
Mk III: 65 × 18 × 5·9 *(19·8 × 5·5 × 1·8)*
Guns: 6—20 mm (1 twin, 4 single) or 5 MGs
Main engines: Detroit diesels; 1 635 bhp; 3 shafts = 26 knots

The PB series was developed as replacements for the "Swift" type inshore patrol craft (PCF). Mk I built by Sewart Seacraft, Berwick, Louisiana; Mk III by Peterson Builders Sturgeon Bay, Wisconsin. Two Mark I prototypes completed in 1972 and delivered to the Navy in 1973 for evaluation; assigned to Naval Reserve Force.
The Mk III design has the pilot house offset to starboard to provide space on port side for installation of additional weapons. (The PB Mark II design was not built).

PB Mk III *9/1976, Dr. Giorgio Arra*

5 INSHORE PATROL CRAFT Mk I (3) and II (2) Series (PCF)

Displacement, tons: 22·5 full load
Dimensions, feet (metres): 50·1 × 13 × 3·5 *(15·3 × 4 × 1·1)*
Guns: 1—81 mm mortar, 3—5 MGs (twin MG mount atop pilot house and single MG mounted over mortar)
Main engines: 2 geared diesels (General Motors); 960 shp; 2 shafts = 28 knots
Complement: 6 (1 officer, 5 enlisted men)

The PCF design is adapted from the all-metal crew boat which is used to support off-shore drilling rigs in the Gulf of Mexico. Approximately 125 built since 1965.
Designation changed from Fast Patrol Craft (PTF) to Inshore Patrol Craft (PCF) on 14 August 1968.

Transfers: PCF 33, 34, and 83-86 transferred to the Philippines in 1966. Additional PCFs of this type constructed specifically for transfer to Thailand, the Philippines, and South Korea; not assigned US hull numbers in the PCF series; 104 PCFs formerly manned by US Navy personnel transferred to South Viet-Nam in 1968-1970. During Viet-Nam war this class was also known as "Swift" class.

PCF Mk I Type *1969, USN*

34 RIVER PATROL BOATS Mk I (2) and II (32) Series (PBR)

Displacement, tons: 8
Dimensions, feet (metres): 32 × 11 × 2·6 *(9·8 × 3·4 × 0·8)*
Guns: 3—5 MGs (twin mount fwd; single aft); 1—40 mm grenade launcher; 1—60 mm mortar in some boats
Main engines: 2 geared diesels (General Motors); water jets = 25+ knots
Complement: 4 or 5 (enlisted men)

Fibreglass hull river patrol boats. Approximately 500 built 1967-73; most transferred to South Viet-Nam and some to Thailand.

PBR Mk II Type *USN*

1 COMMAND AND CONTROL BOAT (CCB)

Displacement, tons: 80 full load
Dimensions, feet (metres): 61 × 17·5 × 3·4 *(18·6 × 5·3 × 1)*
Guns: 3—20 mm; 2—3 MGs; 2—40 mm high velocity-grenade launchers
Main engines: 2 diesels (Detroit); 2 shafts = 8·5 knots max (6 knots sustained)
Complement: 11

This craft serves as afloat command post providing command and communications facilities for ground force and boat group commanders. Heavily armoured. Armament changed to above configuration in 1968. Converted from LCM 6 landing craft. In poor condition and due for deletion in FY 1981.

22 "MINI" ARMOURED TROOP CARRIERS (ATC)

Dimensions, feet (metres): 36 × 12·7 × 3·5 *(11 × 3·9 × 1·1)*
Main engines: 2 diesels (General Motors) water-jet propulsion = 28 knots except one unit with gas turbines
Complement: 2
Troops: 15 to 20

A small troop carrier for riverine and swimmer delivery operations; aluminium hull; ceramic armour. Draught 1 ft when underway at high speed.

Note: All other small craft, ie Assault Support Patrol Boats (ASPB) and Swimmer Support Craft were disposed of 1976-77.

AMPHIBIOUS WARFARE FORCES

Now that all five "Tarawa" class assault ships have been completed the amphibious lift of 62 active and six NRF ships will be sufficient for one and one-third division/wing teams (excluding ships in overhaul). All ships are capable of 20 knots or higher sustained speeds and have helicopter facilities.
A MAF is a division/aircraft wing team and their supporting elements with a total of 45 000 troops and 6 300 US Navy personnel. Although the MAF lift capability is used as measurement criteria for US Navy amphibious ships by defence officials, a more realistic consideration is the number of reinforced battalions which can be maintained afloat in forward areas, primarily the Mediterranean and the Western Pacific. The US Navy is now able to keep two reinforced battalions continuously afloat in "WesPac" and one in the "Med". In addition, a reinforced battalion is intermittently deployed in the Atlantic. NRF assignments are listed at end of section.

V/STOL operations: *Guam* after AV-8A Harrier trials from 1972-74 has continued to carry 12 Marine-flown Harriers upon return to the LPH role. Increasing V/STOL aircraft operations from the LPH/LHA ships have been undertaken.

Minesweeping operations: Several LPHs were used to operate RH-53D Sea Stallion helicopters in the mine countermeasures role during the 1973 sweeping of North Vietnamese ports and the 1974 sweeping of the Suez Canal.

Transport submarine: The transport submarine *Grayback* (SS 574, ex-*LPSS 574*) is in active commission and is listed in the Submarine section of this edition.

2 "BLUE RIDGE" CLASS: AMPHIBIOUS COMMAND SHIPS (LCC)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*FIS*
BLUE RIDGE	LCC 19	Philadelphia Naval Shipyard	27 Feb 1967	4 Jan 1969	14 Nov 1970	PA
MOUNT WHITNEY	LCC 20	Newport News Shipbuilding & Dry Dock Co.	8 Jan 1969	8 Jan 1970	16 Jan 1971	AA

Displacement, tons: 19 100 full load
Dimensions, feet (metres): 620 × 82 × 29 *(189 × 25 × 8·8)*
Main deck width, feet (metres): 108 *(32·9)*
Aircraft: Utility helicopter can be carried
Missiles: SAM—2 Sea Sparrow launchers (Mk 25) (BPDMS)
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
Main engine: 1 geared turbine (General Electric); 22 000 shp; 1 shaft
Boilers: 2 (Foster-Wheeler)
Speed, knots: 23
Range, miles: 13 000 at 16 knots
Complement: 720 (40 officers, 680 enlisted men)
Extra accommodations: 700 (200 officers, 500 enlisted men)

These are large amphibious force command ships of post-World War II design. They can provide integrated command and control facilities for sea, air and land commanders in amphibious operations.
Blue Ridge replaced *Oklahoma City* as Seventh Fleet flagship in FY 1980. Homeported at Yokosuka, Japan.

Classification: Originally designated Amphibious Force Flagships (AGC); redesignated Amphibious Command Ships (LCC) on 1 January 1969.

Design: General hull design and machinery arrangement are similar to the "Iwo Jima" class assault ships.

Electronics: Tactical Aircraft Navigation (Tacan).
These ships have three computer systems to support their Naval Tactical Data System (NTDS), Amphibious Command Information System (ACIS), and Naval Intelligence Processing System (NIPS).
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: Two Mk 115 missile fire control systems.

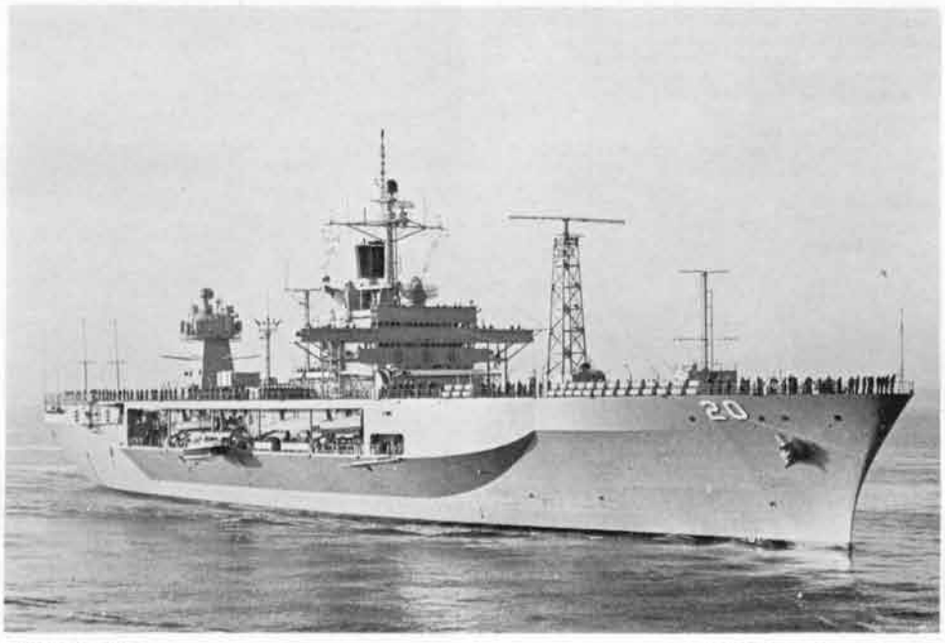
Gunnery: At one stage of design two additional twin 3-in mounts were provided on forecastle; subsequently deleted from final designs. Antennae and their supports severely restrict firing arcs of guns. Two 20 mm Mk 16 CIWS to be fitted. Two 40 mm saluting guns carried.

Personnel: The ships' complements include one Marine officer and 12 enlisted men to maintain communications equipment for use by Marine Corps command and staff.

Radar: 3D search: SPS 48.
Search: SPS 10 and 40.

Rockets: One Mk 36 Chaffroc (RBOC) launcher to be fitted.

BLUE RIDGE *8/1979, Dr. Giorgio Arra*



MOUNT WHITNEY *10/1980, L. and L. van Ginderen*

BLUE RIDGE *1980, Dr. Giorgio Arra*

5 "TARAWA" CLASS: AMPHIBIOUS ASSAULT SHIPS G.P. (LHA)

Name	*No.*	*Builders*	*Erection of First Module*	*Launched*	*Commissioned*	*F/S*
TARAWA	LHA 1	Ingalls Shipbuilding Corporation	15 Nov 1971	1 Dec 1973	29 May 1976	PA
SAIPAN	LHA 2	Ingalls Shipbuilding Corporation	21 July 1972	18 July 1974	15 Oct 1977	AA
BELLEAU WOOD	LHA 3	Ingalls Shipbuilding Corporation	5 Mar 1973	11 Apr 1977	23 Sep 1978	PA
NASSAU	LHA 4	Ingalls Shipbuilding Corporation	13 Aug 1973	21 Jan 1978	28 July 1979	AA
PELILEU (ex-*Da Nang*)	LHA 5	Ingalls Shipbuilding Corporation	12 Nov 1976	25 Nov 1978	3 May 1980	PA

Displacement, tons: 39 300 full load
Dimensions, feet (metres): 820 × 106 × 26 *(250 × 32·3 × 7·9)*
Flight deck, feet (metres): 118·1 *(36)*
Aircraft: (See *Aircraft* note for helicopters). Harrier AV-8A V/STOL aircraft in place of some helicopters as required
Missiles: SAM—2 Sea Sparrow launchers (Mk 25) (BPDMS)
Guns: 3—5 in *(127 mm)*/54 (single Mk 45)
6—20 mm (Mk 67) (single); 2—40 mm saluting
Main engines: 2 geared turbines (Westinghouse); 140 000 shp; 2 shafts
Boilers: 2 (Combustion Engineering)
Speed, knots: 24
Range, miles: 10 000 at 20 knots
Complement: 902 (90 officers, 812 enlisted men)
Troops: 1 703

LHA 1 was authorised in the FY 1969 new construction programme, the LHA 2 and LHA 3 in FY 1970 and LHA 4 and LHA 5 in FY 1971. All ships of this class were built at a new ship production facility known as "Ingalls West". The new yard was developed specifically for multi-ship construction of the same design. LHA 5 renamed 15 February 1978.

Aircraft: The flight deck can operate a maximum of 9 CH-53 Sea Stallion or 12 CH-46 Sea Knight helicopters; the hangar deck can accommodate 19 CH-53 Sea Stallion or 26 CH-46 Sea Knight helicopters. A mix of these and other helicopters and at times AV-8A Harriers could be embarked on LHA 2-5 but not LHA 1.

Design: Beneath the full-length flight deck are two half-length hangar decks, the two being connected by an elevator amidships on the port side and a stern lift; beneath the after elevator is a floodable docking well measuring 268 ft in length and 78 ft in width which is capable of accommodating four LCU 1610 type landing craft. Also included is a large garage for trucks and AFVs and troop berthing for a reinforced battalion.
Storage for 10 000 gallons (US) of vehicle petrol and 400 000 gallons (US) of JP-5 helicopter fuel.
Have 33 730 sq ft available for vehicles and 116 900 cu ft for palletted stores. Six LCM 6 or equivalent also carried.

Electronics: Helicopter navigation equipment provided. Each ship also has an Integrated Tactical Amphibious Warfare Data System (ITAWDS) to provide computerised support in control of helicopters and aircraft, shipboard weapons and sensors, navigation, landing craft control, and electronic warfare.
Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: A 900 hp fixed bow thruster is provided for holding position while unloading landing craft.
Four turbo-alternators, each 2 500 kW; two diesel-alternators, each 2 000 kW.

Fire control: Four Mk 86 gunfire control system and two Mk 115 missile fire control systems.

Fiscal: In early 1974 the estimated total cost of the five LHAs was $1 145 million or an average of $229 million per ship.

Gunnery: To be fitted with two 20 mm Mk 16 CIWS in place of Mk 25 Sea Sparrow launchers.

Medical: These ships are fitted with extensive medical facilities including operating rooms, X-ray room, hospital ward, isolation ward, laboratories, pharmacy, dental operating room and medical store rooms.

Radar: 3D search: SPS 52.
Search: SPS 10 and 40.
Airnavigation: SPN 35.
Fire control: One SPG 60; one SPG 9A.

Rockets: One Mk 36 Chaffroc (RBOC) to be fitted.

SAIPAN

1980, USN (Lt-Cdr. G. H. Scott)

SAIPAN

1980, USN (Lt-Cdr. G. H. Scott)

7 "IWO JIMA" CLASS: AMPHIBIOUS ASSAULT SHIPS (LPH)

Name	No.	Builders	Laid down	Launched	Commissioned	FS
IWO JIMA	LPH 2	Puget Sound Naval Shipyard	2 Apr 1959	17 Sep 1960	26 Aug 1961	AA
OKINAWA	LPH 3	Philadelphia Naval Shipyard	1 Apr 1960	14 Aug 1961	14 Apr 1962	PA
GUADALCANAL	LPH 7	Philadelphia Naval Shipyard	1 Sep 1961	16 Mar 1963	20 July 1963	AA
GUAM	LPH 9	Philadelphia Naval Shipyard	15 Nov 1962	22 Aug 1964	16 Jan 1965	AA
TRIPOLI	LPH 10	Ingalls Shipbuilding Corp	15 June1964	31 July 1965	6 Aug 1966	PA
NEW ORLEANS	LPH 11	Philadelphia Naval Shipyard	1 Mar 1966	3 Feb 1968	16 Nov 1968	PA
INCHON	LPH 12	Ingalls Shipbuilding Corp	8 Apr 1968	24 May 1969	20 June 1970	AA

Displacement, tons: 18 000 (2, 3 and 7), 18 300 (9 and 10), 17 706 (11), 17 515 (12) full load
Dimensions, feet (metres): 602·3 × 84 × 26
(183·7 × 25·6 × 7·9)
Flight deck width, feet (metres): 104 *(31·7)*
Aircraft: For helicopters see *Aircraft* note
4 AV-8A Harriers in place of some troop helicopters
Missiles: SAM: 2 Sea Sparrow launchers (Mk 25) (BPDMS)
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: 1 geared turbine (De Laval in *Tripoli*, GE in *Inchon*, Westinghouse in others); 22 000 shp; 1 shaft
Boilers: 2 Babcock & Wilcox in *Guam*; Combustion Engineering in remainder
Speed, knots: 23
Complement: 609 (47 officers, 562 enlisted men)
Troops: 1 746 (144 officers, 1 602 enlisted men)

Iwo Jima was the world's first ship designed and constructed specifically to operate helicopters. Each LPH can carry a Marine battalion landing team, its guns, vehicles, and equipment, plus a reinforced squadron of transport helicopters and various support personnel.
Iwo Jima was authorised in the FY 1958 new construction programme, *Okinawa* in the FY 1959, *Guadalcanal* in the FY 1960, *Guam* in the FY 1962, *Tripoli* in the FY 1963, *New Orleans* in the FY 1965, and *Inchon* in the FY 1966.
Estimated cost of *Iwo Jima* was $40 million.
Guam was modified late in 1971 and began operations in January 1972 as an interim sea control ship. She operated Harrier AV-8A V/STOL aircraft and SH-3 Sea King A/S helicopters in convoy escort exercises; she reverted to the amphibious role in 1974 but kept 12 AV-8As on board. Several of these ships operated RH-53 minesweeping helicopters to clear North Vietnamese ports in 1973 and the Suez Canal in 1974.

Aircraft: The flight decks of these ships provide for simultaneous take off or landing of seven CH-46 Sea Knight or four CH-53 Sea Stallion helicopters during normal operations. The hangar decks can accommodate 20 CH-46 Sea Knight or 11 CH-53 Sea Stallion helicopters, or various combinations of helicopters.

Design: Each ship has two deck-edge lifts, one to port opposite the bridge and one to starboard aft of island. Full hangars are provided; no arresting wires or catapults. Two small elevators carry cargo from holds to flight deck. Storage provided for 6 500 gallons (US) of vehicle petrol and 405 000 gallons (US) of JP-5 helicopter fuel. Stowage of 4 300 sq ft for vehicles and 37 400 cu ft for palletted stores.

Electronics: Tacan. Advanced electronic warfare equipment fitted.
All except *Tripoli* fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: As rearmed with BPDMS these ships have two Mk 115 missile fire control systems.

Gunnery: As built, each ship had eight 3-in guns in twin mounts, two forward of the island structure and two at stern. Gun battery reduced by half with substitution of BPDMS launchers (see *Missiles* note). Two 20 mm Mk 15 CIWS to be fitted. Two 40 mm saluting guns fitted.

Medical: These ships are fitted with extensive medical facilities including operating room, X-ray room, hospital ward, isolation ward, laboratory, pharmacy, dental operating room, and medical store rooms.

Missiles: One Sea Sparrow launcher forward of island structure and one on the port quarter. *Okinawa* had one BPDMS launcher fitted in 1970 and the second in 1973; *Tripoli* and *Inchon* rearmed in 1972, *Iwo Jima* and *New Orleans* in 1973, *Guam* and *Guadalcanal* in 1974.

TRIPOLI *11/1979, John Mortimer*

IWO JIMA *2/1980, USN (PH1. T. Beauchesne)*

Radar: Search: SPS 10 and 40.
Navigation: SPN 10.

Rockets: One Mk 36 Chaffroc (RBOC) being fitted (already in LPH 7).

OKINAWA *2/1979, Dr. Giorgio Arra*

12 "AUSTIN" CLASS: AMPHIBIOUS TRANSPORT DOCKS (LPD)/ MISCELLANEOUS COMMAND SHIP (AGF)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
AUSTIN	LPD 4	New York Naval Shipyard	6 Feb 1965	AA
OGDEN	LPD 5	New York Naval Shipyard	19 June 1965	PA
DULUTH	LPD 6	New York Naval Shipyard	18 Dec 1965	PA
CLEVELAND	LPD 7	Ingalls Shipbuilding Corp	21 Apr 1967	PA
DUBUQUE	LPD 8	Ingalls Shipbuilding Corp	1 Sep 1967	PA
DENVER	LPD 9	Lockheed S.B. & Construction Co	26 Oct 1968	PA
JUNEAU	LPD 10	Lockheed S.B. & Construction Co	12 July 1969	PA
CORONADO	AGF 11	Lockheed S.B. & Construction Co	23 May 1970	AA
SHREVEPORT	LPD 12	Lockheed S.B. & Construction Co	12 Dec 1970	AA
NASHVILLE	LPD 13	Lockheed S.B. & Construction Co	14 Feb 1970	AA
TRENTON	LPD 14	Lockheed S.B. & Construction Co	6 Mar 1971	AA
PONCE	LPD 15	Lockheed S.B. & Construction Co	10 July 1971	AA

Displacement, tons: 10 000 light;
15 900 (4-6), 16 550 (7-10), 16 900 (11-13), 17 000 (14 and 15) full load
Dimensions, feet (metres): 570 × 100 × 23 *(173·8 × 30·5 × 7)*
Aircraft: Up to 6 UH-34 or CH-46 helicopters
Guns: 2—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: 2 steam turbines (De Laval); 24 000 shp; 2 shafts
Boilers: 2 Foster-Wheeler (Babcock & Wilcox in LPD 5 and 12)
Speed, knots: 21
Complement: 473 (27 officers, 446 enlisted men)
Troops: 930 in LPD 4-6 and LPD 14-15; 840 in LPD 7-13
Flag accommodation: Approx 90 in LPD 7-13

These ships are enlarged versions of the earlier "Raleigh" class; most notes for the "Raleigh" class apply to these ships.
The dates of laying down and launching are: *Austin* and *Ogden* 4 February 1963 and 27 June 1964; *Duluth* 18 December 1963 and 14 August 1965; *Cleveland* 30 November 1964 and 7 May 1966; *Dubuque* 25 January 1965 and 6 August 1966; *Denver* 7 February 1964 and 23 January 1965; *Juneau* 23 January 1965 and 12 February 1966; *Coronado* 3 May 1965 and 30 July 1966; *Shreveport* 27 December 1965 and 25 October 1966; *Nashville* 14 March 1966 and 7 October 1967; *Trenton* 8 August 1966 and 3 August 1968; *Ponce* 31 October 1966 and 20 May 1970. *Duluth* completed at Philadelphia Naval Shipyard.
LPD 4-6 were authorised in the FY 1962 new construction programme, LPD 7-10 in FY 1963, LPD 11-13 in FY 1964, LPD 14 and LPD 15 in FY 1965.

Conversion: *Coronado* was converted to a "miscellaneous command ship (AGF)" in late 1980 at Philadelphia to relieve *La Salle* (AGF 3) as flagship of the Middle East Force while the latter undergoes an extensive overhaul. *Coronado* temporarily classified AGF 11 on 1 October 1980. She will be returned to LPD status when relieved in turn by *La Salle*. (See *La Salle* conversion note for general details of *Coronado*'s modifications).

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Gunnery: Two 20 mm Mk 16 CIWS to be fitted.

Rockets: Each ship will be fitted with Mk 36 Chaffroc. Mk 28 already fitted in *Coronado* and *Nashville*.

TRENTON *10/1980, L. and L. van Ginderen*

DUBUQUE *8/1980, Dr. Giorgio Arra*

2 "RALEIGH" CLASS: AMPHIBIOUS TRANSPORT DOCKS (LPD)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
RALEIGH	LPD 1	New York Naval Shipyard	8 Sep 1962	AA
VANCOUVER	LPD 2	New York Naval Shipyard	11 May 1963	PA

Displacement, tons: 8 040 light; 13 600 full load
Dimensions, feet (metres): 521·8 × 100 × 22 *(159·1 × 30·5 × 6·7)*
Aircraft: Up to 6 UH-34 or CH-46 helicopters (see *Aircraft* note)
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: 2 steam turbines; (De Laval); 24 000 shp; 2 shafts
Boilers: 2 (Babcock & Wilcox)
Speed, knots: 21
Complement: 490 (30 officers, 460 enlisted men)
Troops: 1 139 (143 officers, 996 enlisted men)

The LPD replaces the amphibious transport (LPA) and, in part, the amphibious cargo ship (LKA) and dock landing ship (LSD). The LPD can carry a "balanced load" of assault troops and their equipment, has a docking well for landing craft, a helicopter deck, cargo holds and vehicle garages. *Raleigh* was authorised in the FY 1959 new construction programme, *Vancouver* in the FY 1960. *Raleigh* was laid down on 23 June 1960 and launched on 17 March 1962; *Vancouver* on 19 November 1960 and 15 September 1962. Approximate construction cost was $29 million per ship.
A third ship of this class, *La Salle* (LPD 3), was reclassified as a miscellaneous command ship (AGF 3) on 1 July 1972.

Aircraft: These ships are not normally assigned helicopters because they lack integral hangars and maintenance facilities. It is intended that a nearby amphibious assault ship (LHA or LPH) would provide helicopters during an amphibious operation. Telescopic hangars have been fitted.

Design: These ships resemble dock landing ships (LSD) but have fully enclosed docking well with the roof forming a permanent helicopter platform. The docking well is 168 ft long and 50 ft wide *(51·2 × 15·2)*, less than half the length of wells in newer LSDs; the LPD design provides more space for vehicles, cargo and troops. Ramps allow vehicles to be driven between helicopter deck, parking area and docking well; side ports provide roll-on/roll-off capability when docks are available. An overhead monorail in the docking well with six cranes facilitates loading landing craft. The docking well in these ships can hold one LCU and three LCM-6s or four LCM-8s or 20 LVTs (amphibious tractors). In addition, two LCM-6s or four LCPLs are carried on the boat deck which are lowered by crane.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Gunnery: Two 20 mm Mk 16 CIWS to be fitted.

Rockets: Mk 36 Chaffroc system to be fitted.

RALEIGH *1/1976, USN*

VANCOUVER *2/1979, Dr. Giorgio Arra*

0 + 6 "LSD 41" CLASS DOCK LANDING SHIPS (LSD) (PROPOSED)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
—	LSD 41	Lockheed S.B. & Construction Co	—	Proj
—	LSD 42-46			

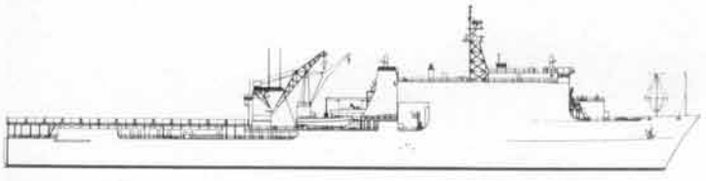
Displacement, tons: 10 976 light; 15 774 full load
Dimensions, feet (metres): 608 × 84 × 19·7 *(185·3 × 25·6 × 6)*
Guns: 2—20 mm Mk 15 CIWS
Main engines: 4 Colt-Pielstick PC2 5V diesels; 40 000 shp; 2 shafts; cp propellers = 23 knots
Complement: 376 (20 officers, 356 enlisted men)
Troops: 338 (25 officers, 313 enlisted men)

Six of this class are to be constructed as replacements for the "Thomaston" class. Upon examination of the design by Secretary of Defense Harold Brown, construction was cut back to two ships as it was considered the technology used in the design was outmoded. The lead ship was originally to be requested in FY 1980 programme and the second ship under the FY 1983 programme.
Under Congressional pressure, this class was reinstated on 8 January 1980. A request for one ship was included in FY 1981 budget. A contract for construction of the first ship was awarded to Lockheed S.B. and C. Co, Seattle on 14 February 1980.
It is expected that the new Administration will reinstate the next five ships of this programme, $47 million having been approved by Congress for long-lead items for LSD 42 in FY 1981.

Design: Based on the previous "Anchorage" class which was designed over 15 years ago. Well deck measures 440 × 50 ft *(134·1 × 15·2 m)*. The ship will be able to handle the CH-53E helicopter and/or the AV-8A Harrier V/STOL aircraft as well as air cushion landing craft vehicles.
Class designed to carry four of the new LACVs (Landing Craft Air Cushion vehicles) and 21 LCM 6s. Cargo capacity 5 000 cu ft.

Electronics/Radar: Will be fitted with the SPS 55 and SPS 65V radars as well as the SLQ 32V electronic countermeasures systems.

Rockets: To be fitted with Mk 36 Chaffroc (RBOC) system.



PROPOSED "LSD 41" Class — *A. D. Baker III*

5 "ANCHORAGE" CLASS: DOCK LANDING SHIPS (LSD)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
ANCHORAGE	LSD 36	Ingalls Shipbuilding Corp	15 Mar 1969	PA
PORTLAND	LSD 37	General Dynamics, Quincy, Mass	3 Oct 1970	AA
PENSACOLA	LSD 38	General Dynamics, Quincy, Mass	27 Mar 1971	AA
MOUNT VERNON	LSD 39	General Dynamics, Quincy, Mass	13 May 1972	PA
FORT FISHER	LSD 40	General Dynamics, Quincy, Mass	9 Dec 1972	PA

Displacement, tons: 8 600 light; 13 600 full load
Dimensions, feet (metres): 553·3 × 84 × 20 *(168·6 × 25·6 × 6)*
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: Steam turbines (De Laval); 24 000 shp; 2 shafts = 20 knots sustained, 22 max
Boilers: 2 (Foster-Wheeler except Combustion Engineering in *Anchorage*)
Complement: 397 (21 officers, 376 enlisted men)
Troops: 376 (28 officers, 348 enlisted men)

These ships are similar in appearance to earlier classes but with a tripod mast. Helicopter platform aft with docking well partially open; helicopter platform can be removed. Docking well approximately 430 × 50 ft *(131·1 × 15·2 m)* can accommodate three LCU-type landing craft. Space on deck for one LCM, and davits for one LCPL and one LCVP. Two 50 ton capacity cranes.
LSD 36 was authorised in the FY 1965 shipbuilding programme; LSD 37-39 in the FY 1966 programme; LSD 40 in the FY 1967 programme.
Anchorage was laid down on 13 March 1967 and launched in 5 May 1968; *Portland* on 21 September 1967 and 20 December 1969; *Pensacola* on 12 March 1969 and 11 July 1970; *Mount Vernon* on 29 January 1970 and 17 April 1971; and *Fort Fisher* on 15 July 1970 and 22 April 1972.
Estimated minimum construction cost $11·5 million per ship.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Gunnery: Two 20 mm Mk 16 CIWS to be fitted.

Rockets: One Mk 36 Chaffroc (RBOC) to be fitted.

MOUNT VERNON — *1/1980, Dr. Giorgio Arra*

ANCHORAGE — *7/1979, Dr. Giorgio Arra*

8 "THOMASTON" CLASS: DOCK LANDING SHIPS (LSD)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
THOMASTON	LSD 28	Ingalls Shipbuilding Corp	17 Sep 1954	PA
PLYMOUTH ROCK	LSD 29	Ingalls Shipbuilding Corp	29 Nov 1954	AA
FORT SNELLING	LSD 30	Ingalls Shipbuilding Corp	24 Jan 1955	AA
POINT DEFIANCE	LSD 31	Ingalls Shipbuilding Corp	31 Mar 1955	PA
SPIEGEL GROVE	LSD 32	Ingalls Shipbuilding Corp	8 June 1956	AA
ALAMO	LSD 33	Ingalls Shipbuilding Corp	24 Aug 1956	PA
HERMITAGE	LSD 34	Ingalls Shipbuilding Corp	14 Dec 1956	AA
MONTICELLO	LSD 35	Ingalls Shipbuilding Corp	29 Mar 1957	PA

Displacement, tons: 6 880 light; 12 000 full load
Dimensions, feet (metres): 510 × 84 × 19 *(155·5 × 25·6 × 5·8)*
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: Steam turbines (General Electric); 24 000 shp; 2 shafts = 22·5 knots
Boilers: 2 (Babcock & Wilcox)
Range, miles: 10 000+ (cruising)
Complement: 400
Troops: 340

LSD 28-31 launched in 1954 on 9 February, 7 May, 16 July, and 28 September respectively; LSD 32 launched on 10 November 1955; LSD 33-35 launched in 1956 on 20 January, 12 June and 10 August. Fitted with helicopter platform over docking well; two 5 ton capacity cranes; can carry 21 LCM-6 or three LCU and six LCM landing craft or approximately 50 LVTs (amphibious tractors) in docking well plus 30 LVTs on mezzanine and upper decks (with helicopter landing area clear). Welldeck measures 391 × 48 ft.
Note pole mast compared to tripod mast of "Anchorage" class which have enclosed 3-in gun mounts forward of bridge.
Class to be replaced by new LSD 41 class.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Gunnery: As built, each ship had 16 3-in guns subsequently reduced to present fitting.

Rockets: One Mk 36 Chaffroc (RBOC) to be fitted except in LSD 28 (already in LSD 31).

SPIEGEL GROVE — *8/1980, L. and L. van Ginderen*

THOMASTON — *1/1980, Dr. Giorgio Arra*

MONTICELLO — *2/1979, Dr. Giorgio Arra*

20 "NEWPORT" CLASS: TANK LANDING SHIPS (LST)

Name	No.	Laid down	Launched	Commissioned	F/S
NEWPORT	LST 1179	1 Nov 1966	3 Feb 1968	7 June 1969	AA
MANITOWOC	LST 1180	1 Feb 1967	4 June 1969	24 Jan 1970	AA
SUMTER	LST 1181	14 Nov 1967	13 Dec 1969	20 June 1970	AA
FRESNO	LST 1182	16 Dec 1967	28 Sep 1968	22 Nov 1969	PA
PEORIA	LST 1183	22 Feb 1968	23 Nov 1968	21 Feb 1970	PA
FREDERICK	LST 1184	13 Apr 1968	8 Mar 1969	11 Apr 1970	PA
SCHENECTADY	LST 1185	2 Aug 1968	24 May 1969	13 June 1970	PA
CAYUGA	LST 1186	28 Sep 1968	12 July 1969	8 Aug 1970	PA
TUSCALOOSA	LST 1187	23 Nov 1968	6 Sep 1969	24 Oct 1970	PA
SAGINAW	LST 1188	24 May 1969	7 Feb 1970	23 Jan 1971	AA
SAN BERNARDINO	LST 1189	12 July 1969	28 Mar 1970	27 Mar 1971	PA
BOULDER	LST 1190	6 Sep 1969	22 May 1970	4 June 1971	NRF
RACINE	LST 1191	13 Dec 1969	15 Aug 1970	9 July 1971	NRF
SPARTANBURG COUNTY	LST 1192	7 Feb 1970	11 Nov 1970	1 Sep 1971	AA
FAIRFAX COUNTY	LST 1193	28 Mar 1970	19 Dec 1970	16 Oct 1971	AA
LA MOURE COUNTY	LST 1194	22 May 1970	13 Feb 1971	18 Dec 1971	AA
BARBOUR COUNTY	LST 1195	15 Aug 1970	15 May 1971	12 Feb 1972	PA
HARLAN COUNTY	LST 1196	7 Nov 1970	24 July 1971	8 Apr 1972	AA
BARNSTABLE COUNTY	LST 1197	19 Dec 1970	2 Oct 1971	27 May 1972	AA
BRISTOL COUNTY	LST 1198	13 Feb 1971	4 Dec 1971	5 Aug 1972	PA

Displacement, tons: 8 450 full load
Dimensions, feet (metres): 522·3 (hull) × 69·5 × 17·5 (aft) *(159·2 × 21·2 × 5·3)*
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: 6 diesels (General Motors in 1179-1181, Alco in others); 16 000 bhp; 2 shafts; (cp propellers) = 20 knots
Range, miles: 2 500+ (cruising)
Complement: 225 (14 officers, 211 enlisted men)
Troops: 420 (20 officers, 400 enlisted men)

These ships were of an entirely new design, larger and faster than previous tank landing ships. They operate with 20 knot amphibious squadrons to transport tanks, other heavy vehicles, engineer equipment, and supplies which cannot be readily landed by helicopters or landing craft.
Newport was authorised in the FY 1965 new construction programme. LST 1180-1187 in FY 1966, and LST 1188-1198 in FY 1967. LST 1179-1181 built by Philadelphia Naval Shipyard, LST 1182-1198 built by National Steel & S.B. Co, San Diego, California. Seven additional ships of this type that were planned for the FY 1971 new construction programme were deferred.
Ships of this class are being transferred to the Naval Reserve Force from FY 1981 onwards.

Design: These ships are the first LSTs to depart from the bow-door design developed by the British early in World War II. The hull form required to achieve 20 knots would not permit bow doors, thus these ships unload by a 112 ft ramp over their bow. The ramp is supported by twin derrick arms. A ramp just forward of the superstructure connects the lower tank deck with the main deck and a vehicle passage through the superstructure provides access to the parking area amidships. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or on to a pier. Vehicle stowage is rated at 500 tons and 19 000 sq ft (5 000 sq ft more than previous LSTs). Length over derrick arms is 562 ft; full load draught is 11·5 ft forward and 17·5 ft aft. Bow thruster fitted to hold position offshore while unloading amphibious tractors.

Electronics: Fitted with OE-82 satellite communications antenna and WSC-3 transceiver.

Gunnery: Two 20 mm Mk 16 CIWS to be fitted.

Rockets: One Mk 36 Chaffroc (RBOC) to be fitted.

FRESNO *8/1980, Dr. Giorgio Arra*

SUMTER *6/1979, Michael D. J. Lennon*

BARBOUR COUNTY *4/1980, J. L. M. van der Burg*

3 "DE SOTO COUNTY" CLASS: TANK LANDING SHIPS (LST)

Name	No.	Builders	Commissioned	F/S
SUFFOLK COUNTY	LST 1173	Boston Navy Yard	15 Aug 1957	MAR
LORAIN COUNTY	LST 1177	American S.B. Co, Lorain, Ohio	3 Oct 1959	MAR
WOOD COUNTY	LST 1178	American S.B. Co, Lorain, Ohio	5 Aug 1959	MAR

Displacement, tons: 4 164 light; 7 100 full load
Dimensions, feet (metres): 445 × 62 × 17·5 *(135·6 × 18·9 × 5·3)*
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: 6 diesels (Fairbanks-Morse in 1173, Cooper Bessemer in others); 13 700 bhp; 2 shafts; (cp propellers) = 16·5 knots
Complement: 188 (15 officers, 173 men)
Troops: 634 (30 officers, 604 enlisted men)

Originally a class of seven tank landing ships (LST 1171, 1173-1178 with LST 1172 not built). They were faster and had a greater troop capacity than earlier LSTs; considered the "ultimate" design attainable with the traditional LST bow-door configuration.
Suffolk County launched on 5 September 1956, *Lorain County* on 22 June 1957, and *Wood County* on 14 December 1957.
Suffolk County decommissioned 25 August 1972, *Lorain County* on 1 September 1972 and *Wood County* on 1 May 1972. All in reserve and scheduled for transfer to other countries in 1982.

Conversion: *Wood County* was to have been converted to Patrol Combatant Support Ship (AGHS) under the original FY 1978 programme but this was deleted by the new administration.

Design: High degree of habitability with all crew and troop living spaces air-conditioned. Can carry 23 medium tanks or vehicles up to 75 tons on 288 ft long (lower) tank deck. Davits for four LCVP-type landing craft. Liquid cargo capacity of 170 000 gallons (US) diesel or jet fuel plus 7 000 gallons (US) of petrol for embarked vehicles; some ships had reduced troop spaces to carry additional 250 000 gallons (US) of aviation fuel for pumping ashore or to other ships.

SUFFOLK COUNTY *1971, USN*

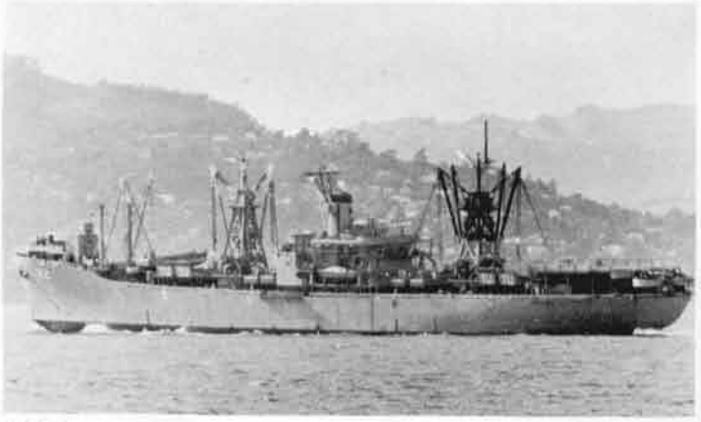
1 "TULARE" CLASS: AMPHIBIOUS CARGO SHIP (LKA)

Name	No.	Builders	Commissioned	F/S
TULARE (ex-*Evergreen Mariner*)	LKA 112	Bethlehem, San Francisco	13 Jan 1956	MPR

Displacement, tons: 9 050 light; 17 500 full load
Dimensions, feet (metres): 564 × 80 × 28 *(171·9 × 24·4 × 8·5)*
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: Steam turbine (De Laval); 22 000 shp; 1 shaft = 23 knots
Boilers: 2 (Combustion Engineering)
Complement: 164 (10 officers, 154 enlisted men)
Troops: 319 (18 officers, 301 enlisted men)

Laid down on 16 February 1953; launched on 22 December 1953; acquired by Navy during construction; C4-S-1A type. Has helicopter landing platform and booms capable of lifting 60 ton landing craft. Carries nine LCM-6 and 11 LCVP landing craft as deck cargo. Designation changed from AKA 112 to LKA 112 on 1 January 1969.
Tulare was assigned to the Naval Reserve Force on 1 July 1975. Decommissioned 15 February 1980 and transferred to Maritime Administration Suisin Bay for lay-up.

Class: Thirty-five "Mariner" design C4-S-1A merchant ships built during the early 1950s; five acquired by Navy, three for conversion to amphibious ships (AKA-APA) (two transferred to Spain) and two for support of Polaris-Poseidon programme (designated AG).



TULARE *8/1980, L. and L. van Ginderen*

5 "CHARLESTON" CLASS: AMPHIBIOUS CARGO SHIPS (LKA)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
CHARLESTON	LKA 113	Newport News S.B. & D.D. Co	14 Dec 1968	NRF
DURHAM	LKA 114	Newport News S.B. & D.D. Co	24 May 1969	NRF
MOBILE	LKA 115	Newport News S.B. & D.D. Co	29 Sep 1969	NRF
ST. LOUIS	LKA 116	Newport News S.B. & D.D. Co	22 Nov 1969	PA
EL PASO	LKA 117	Newport News S.B. & D.D. Co	17 Jan 1970	NRF

Displacement, tons: 10 000 light; 18 600 full load
Dimensions, feet (metres): 575·5 × 62 × 25·5 *(175·4 × 18·9 × 7·7)*
Guns: 6—3 in *(76 mm)*/50 (twin Mk 33)
Main engine: 1 steam turbine (Westinghouse); 19 250 shp; 1 shaft = 20 knots
Boilers: 2 (Combustion Engineering)
Complement: 334 (24 officers, 310 enlisted men)
Troops: 226 (15 officers, 211 enlisted men)

Charleston laid down 5 December 1966, launched 2 December 1967; *Durham* laid down 10 July 1967, launched 29 March 1968; *Mobile* laid down 15 January 1968, launched 19 October 1968; *St. Louis* 3 April 1968 and 4 January 1969 and *El Paso* 22 October 1968 and 17 May 1969.
These ships are designed specifically for the attack cargo ship role; can carry nine landing craft (LCM) and supplies for amphibious operations. Design includes two heavy-lift cranes with a 78·4 ton capacity, two 40 ton capacity booms, and eight 15 ton capacity booms; helicopter deck aft. LKA 113-116 were authorised in the FY 1965 shipbuilding programme; LKA 117 in the FY 1966 programme. Cost of building was approximately $21 million per ship.
Charleston to NRF on 21 November 1979, *Durham* on 1 October 1979, *Mobile* on 1 September 1980 and *El Paso* on 1 March 1981.

Classification: Originally designated Attack Cargo Ship (AKA), *Charleston* redesignated Amphibious Cargo Ship (LKA) on 14 December 1968; others to LKA on 1 January 1969.

Engineering: These are among the first US Navy ships with a fully automated main propulsion plant; control of plant is from bridge or central machinery space console. This automation permitted a 45 man reduction in complement.

Gunnery: Two 20 mm Mk 16 CIWS to be fitted.

Rockets: One Mk 36 Chaffroc RBOC to be installed.

ST. LOUIS *4/1980, J. L. M. van der Burg*

LANDING CRAFT

AMPHIBIOUS AIR CUSHION VEHICLES (LACV)

Three LACV requested in FY 1982 programme, the design resulting from the competition between Jeff A and Jeff B, incorporating the best points of both. Total cost $76·1 million for the three; first to be completed in 1985.

1 AMPHIBIOUS ASSAULT LANDING CRAFT (AALC) BELL DESIGN (JEFF-B)

Weight, tons: 165 gross
Dimensions, feet (metres): 86·75 oa × 47 × (height) 23·5 *(26·4 × 14·3 × 7·2)*
Main/lift engines: 6 gas turbines (Avco-Lycoming T40); 16 800 hp; interconnected with 2 aircraft-type propellers in rotating shrouds for propulsive thrust and 4 horizontal fans for cushion lift = approx 50 knots cruising
Range, miles: 200
Complement: 6

Built by Bell Aerosystems. Completed 1976. Above dimensions are for craft on air cushion; when at rest dimensions are 80 × 43 × 19 ft *(24·4 × 13·1 × 5·8 m)* Aluminium construction; bow and stern ramps; cargo area of 1 738 sq ft; three engines housed in each side structure with raised pilot house on starboard side. Performance parameters similar to Jeff (A).
Distinguished from Aerojet-General craft by having only two shrouded propellers for thrust and steering.

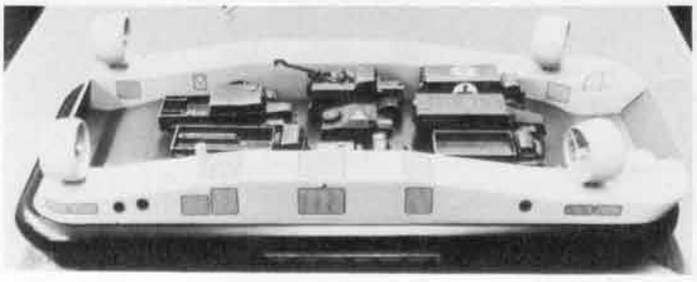
JEFF-B *1980, Bell Aerospace*

1 AMPHIBIOUS ASSAULT LANDING CRAFT (AALC) AEROJET-GENERAL DESIGN (JEFF-A)

Weight, tons: 90 empty; 167 gross
Dimensions, feet (metres): 96·2 oa × 48 × (height) 23·2 *(29·3 × 14·6 × 7·1)*
Main engines: 4 gas turbines (Avco-Lycoming T40); 15 000 hp; 4 aircraft-type propellers in rotating shrouds for propulsive thrust = approx 50 knots cruising
Lift engines: 2 gas turbines (Avco-Lycoming T40); 7 500 hp; 8 horizontal fans (2 sets) for cushion lift
Range, miles: 200
Complement: 6

This is an Air Cushion Vehicle (ACV) landing craft developed by the Aerojet-General Corporation and built by Todd Shipyards, Seattle, Washington, under Navy contract. Construction completed in February 1975 with one year of contractor testing before delivery to Navy in February 1976. (Construction shifted from Tacoma Boatbuilding Co).
Above dimensions are for craft on air cushion; when at rest dimensions will be 97 × 44 × 19 ft *(29·6 × 13·4 × 5·8 m)*. Designed to carry 120 000 lb payload at a design speed of 50 knots (same as Jeff-B). Design features include aluminium construction, bow and stern ramps, cargo deck area of 2 100 sq ft; two sound-insulated compartments each to hold four persons; three engines housed in each side structure; four propellers in rotating shrouds provide horizontal propulsion and steering.
Performance parameters include four-hour endurance (200 n. mile range), 4 ft obstacle clearance, and capability to maintain cruise speed in Sea State 2 with 25 knot headwind.

Project: Aerojet-General and Bell Aerosystems were awarded contracts in 1971 to design competitive assault landing craft employing ACV technology and to build and test one craft per company.
Jeff-A and B are supported above the land or water surface by a continuously generated cushion of air held by flexible "skirts" that surround the base of the vehicle. They differ from surface effect ships (SES) which have rigid sidewalls that penetrate the water surface to help hold the cushion.
Tests run with both craft until the best features of each were evaluated, to be incorporated in the LACV design. $18·3 million appropriated under FY 1979 for these tests.



AEROJET-GENERAL DESIGN (Model)

59 "LCU 1610" CLASS: UTILITY LANDING CRAFT (LCU)

LCU 1613	**LCU 1627**	**LCU 1641**	**LCU 1651**	**LCU 1661**	**LCU 1671**
LCU 1614	**LCU 1628**	**LCU 1642**	**LCU 1652**	**LCU 1662**	**LCU 1672**
LCU 1616	**LCU 1629**	**LCU 1643**	**LCU 1653**	**LCU 1663**	**LCU 1673**
LCU 1617	**LCU 1630**	**LCU 1644**	**LCU 1654**	**LCU 1664**	**LCU 1674**
LCU 1619	**LCU 1631**	**LCU 1645**	**LCU 1655**	**LCU 1665**	**LCU 1675**
LCU 1621	**LCU 1632**	**LCU 1646**	**LCU 1656**	**LCU 1666**	**LCU 1676**
LCU 1623	**LCU 1633**	**LCU 1647**	**LCU 1657**	**LCU 1667**	**LCU 1677**
LCU 1624	**LCU 1634**	**LCU 1648**	**LCU 1658**	**LCU 1668**	**LCU 1678**
LCU 1626	**LCU 1635**	**LCU 1649**	**LCU 1659**	**LCU 1669**	**LCU 1679**
	LCU 1637	**LCU 1650**	**LCU 1660**	**LCU 1670**	**LCU 1680**

Displacement, tons: 200 light; 375 full load
Dimensions, feet (metres): 134·9 × 29 × 6·1 *(41·1 × 8·8 × 1·9)*
Guns: 2—50 MGs
Main engines: 4 diesels (Detroit); 1 000 bhp; 2 shafts (Kort nozzles) = 11 knots
Range, miles: 1 200 at 8 knots
Complement: 12 to 14 (enlisted men)

Improved landing craft, larger than previous series; can carry three M-103 or M-48 tanks (approx 64 tons and 48 tons respectively). Cargo capacity 170 tons.
LCU 1610-1612 built by Christy Corp, Sturgeon Bay, Wisconsin; LCU 1613-1619, 1623, 1624 built by Gunderson Bros Engineering Corp, Portland, Oregon; LCU 1620, 1621, 1625, 1626, 1629, 1630 built by Southern Shipbuilding Corp, Slidell, Louisiana; LCU 1622 built by Weaver Shipyards, Texas; LCU 1627, 1628, 1631-1636 built by General Ship and Engine Works (last six units completed in 1968); LCU 1638-1645 built by Marinette Marine Corp, Marinette, Wisconsin (completed 1969-70); LCU 1646-1666 built by Defoe Shipbuilding Co, Bay City, Michigan (completed 1970-71). The one-of-a-kind aluminium hull, 133·8 ft LCU 1637 built by Pacific Coast Engineering Co, Alameda, California; LCU 1667-1670 built by General Ship & Engine Works, East Boston, in 1973-74; LCU 1671-1680 built by Marinette Marine Corp, 1974-76.
LCU 1636, 1638, 1639, 1640 reclassified as YFB 88-91 in October 1969 LCU 1620 and 1625 to YFU 92 and 93 respectively, in April 1971; LCU 1611, 1615, 1622 to YFU 97-99 in February 1972; LCU 1610, 1612 to YFU 100 and 101 respectively, in August 1972; LCU 1618 to IX 508 on 1 December 1979.

Engineering: Only two diesels fitted with vertical cycloidal propellers shipped in LCU 1621.

LCU 1652 *4/1980, J. L. M. van der Burg*

31 "LCU 1466" CLASS: UTILITY LANDING CRAFT (LCU)

LCU 1466	LCU 1473	LCU 1487	LCU 1505	LCU 1539	LCU 1558
LCU 1467	LCU 1477	LCU 1488	LCU 1532	LCU 1547	LCU 1559
LCU 1468	LCU 1482	LCU 1489	LCU 1535	LCU 1548	LCU 1563
LCU 1469	LCU 1484	LCU 1490	LCU 1536	LCU 1552	LCU 1564
LCU 1470	LCU 1485	LCU 1492	LCU 1537	LCU 1554	LCU 1578
LCU 1472					

Displacement, tons: 180 light; 360 full load
Dimensions, feet (metres): 119 × 34 × 6 *(36·3 × 10·4 × 1·8)*
Guns: 2—20 mm
Main engines: 3 diesels (Gray Marine); 675 bhp; 3 shafts = 10 knots
Complement: 14

These are enlarged versions of the World War II-built LCTs; constructed during the early 1950s. LCU 1496 reclassified as YFU 70 on 1 March 1966; LCU 1471 to YFU 88 in May 1968; LCU 1576, 1582 and 1608 to YFU 89-91, respectively, in June 1970; LCU 1488, 1491, and 1609 to YFU 94-96 on 1 June 1971; YFU 94 reverted to LCU 1488 on 1 February 1972.
LCUs 1473, 1505, 1532, 1537, 1548, 1552, 1554, 1558, 1563, 1564 and 1578 acquired from the US Army in September 1978. All of this class are classified as LCUs although not all are actually employed as such.

LCU 1488 *1965, USN*

MECHANISED LANDING CRAFT: LCM 8 TYPE

Displacement, tons: 115 full load (steel) or 105 full load (aluminium)
Dimensions, feet (metres): 73·7 × 21 × 5·2 *(22·5 × 6·4 × 1·6)*
Main engines: 2 diesels (Detroit or General Motors); 650 bhp; 2 shafts = 9 knots
Complement: 5 (enlisted men)

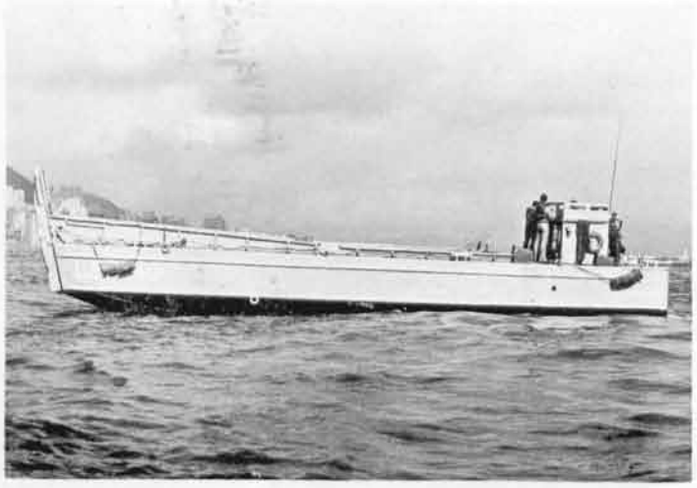
Constructed of welded-steel or (later units) aluminium. Can carry one M-48 or M-60 tank (both approx 48 tons) or 60 tons cargo; range is 150 nautical miles at full load. Also operated in large numbers by the US Army.

LCM 8 *1976, Dr. Giorgio Arra*

MECHANISED LANDING CRAFT: LCM 6 TYPE

Displacement, tons: 60 to 62 full load
Dimensions, feet (metres): 56·2 × 14 × 3·9 *(17·1 × 4·3 × 1·2)*
Main engines: Diesels; 2 shafts; 450 bhp = 9 knots

Welded-steel construction. Cargo capacity is 34 tons or 80 troops.



LCM 6 *7/1979, Dr. Giorgio Arra*

LANDING CRAFT VEHICLE AND PERSONNEL (LCVP)

Displacement, tons: 13·5 full load
Dimensions, feet (metres): 35·8 × 10·5 × 3·5 *(10·9 × 3·2 × 1·1)*
Main engine: Diesel; 325 bhp; 1 shaft = 9 knots

Constructed of wood or GRP. Fitted with 30-calibre machine guns when in combat areas. Cargo capacity, 8 000 lb; range, 110 n. miles at full load.

LCVP *9/1978, Gerhard Koop*

2 WARPING TUGS (LWT)

LWT 1 **LWT 2**

Displacement, tons: 61 (hoisting weight)
Dimensions, feet (metres): 85 × 22 × 6·8 *(25·9 × 6·7 × 2·1)*
Main engines: 2 diesels (Harbormaster); 420 bhp; 2 steerable shafts = 9 knots
Complement: 6 (enlisted men)

These craft are employed in amphibious landings to handle pontoon causeways. The LWT 1 and 2 are prototypes of an all-aluminium design completed in 1970. A collapsible A-frame is fitted forward to facilitate handling causeway anchors and ship-to-shore fuel lines. They can be "side loaded" on the main deck of an "LST 1179" class ship or carried in an LPD/LSD type ship. The propulsion motors are similar to outboard motors, providing both steering and thrust, obviating the need for rudders.
Built by Campbell Machine, San Diego, California.

LWT 2 *USN*

WARPING TUGS (LWT)

Displacement, tons: approx 120
Dimensions, feet (metres): 92·9 × 23 × 6·5 *(28·3 × 7 × 2)*
Main engines: 2 outboard propulsion units = 6·5 knots

These craft are fabricated from pontoon sections and are assembled by the major amphibious commands as required.

LWT 85 *USN*

NAVAL RESERVE FORCE TRAINING AMPHIBIOUS WARFARE SHIPS

Name/Hull No.	*NRF Homeport*	*Date of Assignment*
CHARLESTON (LKA 113)	Norfolk, Va	21 Nov 1979
DURHAM (LKA 114)	San Diego, Calif	1 Oct 1979
MOBILE (LKA 115)	Long Beach, Calif	1 Sep 1980
EL PASO (LKA 117)	Norfolk, Va	1 Mar 1980
BOULDER (LST 1190)	Little Creek, Va	1 Dec 1980
RACINE (LST 1191)	San Diego, Calif	15 Jan 1981

MINE WARFARE FORCES

The US Navy has initiated a programme to construct a new class of mine countermeasures ships especially for deep water operations.
Currently the Navy operates three active and 22 Naval Reserve Force (NRF) minesweepers. The active ships provide support to mine research and development activities at the Naval Coastal Systems Laboratory in Panama City, Florida; the NRF ships are manned by composite active-reserve crews. In addition, the Navy flies 15 specially equipped RH-53D Sea Stallion helicopters. These helicopters, which tow mine countermeasure devices, are readily deployable to aircraft carriers or amphibious ships in overseas areas. They can counter mines laid in shallow waters but have no capability against deep-water mines.
The US Navy maintains no surface ships with a minelaying capability. Rather, the Navy can plant mines by carrier-based aircraft, land-based maritime patrol aircraft, and attack submarines. The large B-52 Stratofortress bombers of the Strategic Air Command can also plant sea mines. See front of section for data on US Mines.

MINE HUNTERS (MHC): PROPOSED

A new class of Mine Hunters (MHC) is in the design stages.

0 + (21) MINE COUNTERMEASURES VEHICLES (MCM): PROPOSED

Displacement, tons: 1 040 full load
Dimensions, feet (metres): 210 × 44·3 × 10·5 *(64 × 13·5 × 3·2)*
Guns: Probably one 20 mm
Main engines: Four Waukesha diesels; bhp not available; 2 shafts = 14 knots
Complement: 62 (5 officers, 57 enlisted men)

Over the next 10-15 years 21 ships of this class are to be constructed. This class will replace the surviving "Aggressive", "Dash" and "Acme" Classes. The MCM hull will be constructed of steel. Construction of this class has been delayed while new minesweeping gear is being developed and the design altered to make it more compact. The first ship is requested under the FY 1982 programme at a cost of $100·6 million to be followed by four more in each of the FY 1984 to FY 1986 programmes. Each follow on ship will cost about $80 million to build.

Radar: SPS-55

Sonar: Possibly SQQ-14.

2 "ACME" CLASS: OCEAN MINESWEEPERS (MSO)

Name	*No.*	*Launched*	*Commissioned*	*F/S*
ADROIT	MSO 509	20 Aug 1955	4 Mar 1957	NRF
AFFRAY	MSO 511	18 Dec 1956	8 Dec 1958	NRF

Displacement, tons: 633 light; 750 full load
Dimensions, feet (metres): 173 × 35 × 14 *(52·7 × 10·7 × 4·3)*
Main engines: 2 diesels (Packard), 2 280 bhp; 2 shafts; (cp propellers) = 15 knots
Complement: 81 (7 officers, 37 enlisted active duty; 4 officers, 33 enlisted reserve)

Built by Frank L. Sample, Jr. Inc, Boothbay Harbor, Maine. Plans to modernise these ships were cancelled (see notes under "Aggressive" class below).
Adroit and *Affray* are assigned to Naval Reserve training, manned partially by active and partially by reserve personnel (see notes under "Aggressive" class below).

AFFRAY *1969, USN*

23 "AGGRESSIVE" and "DASH" CLASSES: OCEAN MINESWEEPERS (MSO)

Name	*No.*	*Launched*	*Commissioned*	*F/S*
CONSTANT	MSO 427	14 Feb 1952	8 Sep 1954	NRF
DASH	MSO 428	20 Sep 1952	14 Aug 1953	NRF
DETECTOR	MSO 429	5 Dec 1952	26 Jan 1954	NRF
DIRECT	MSO 430	27 May 1953	9 July 1954	NRF
DOMINANT	MSO 431	5 Nov 1953	8 Nov 1954	NRF
ENGAGE	MSO 433	18 June 1953	29 June1954	NRF
ENHANCE	MSO 437	11 Oct 1952	16 Apr 1955	NRF
ESTEEM	MSO 438	20 Dec 1952	10 Sep 1955	NRF
EXCEL	MSO 439	25 Sep 1953	24 Feb 1955	NRF
EXPLOIT	MSO 440	10 Apr 1953	31 Mar 1954	NRF
EXULTANT	MSO 441	6 June 1953	22 June1954	NRF
FEARLESS	MSO 442	17 July 1953	22 Sep 1954	NRF
FIDELITY	MSO 443	21 Aug 1953	19 Jan 1955	AA
FORTIFY	MSO 446	14 Feb 1953	16 July 1954	NRF
ILLUSIVE	MSO 448	12 July 1952	14 Nov 1953	AA
IMPERVIOUS	MSO 449	29 Aug 1952	15 July 1954	NRF
IMPLICIT	MSO 455	1 Aug 1953	10 Mar 1954	NRF
INFLICT	MSO 456	6 Oct 1953	11 May 1954	NRF
PLUCK	MSO 464	6 Feb 1954	11 Aug 1954	NRF
CONQUEST	MSO 488	20 May 1954	20 July 1955	NRF
GALLANT	MSO 489	4 June 1954	14 Sep 1955	NRF
LEADER	MSO 490	15 Sep 1954	16 Nov 1955	AA
PLEDGE	MSO 492	20 July 1955	20 Apr 1956	NRF

Displacement, tons: 620 light; 735 full load (428-431); 720 (remainder)
Dimensions, feet (metres): 172 × 36 × 13·6 *(52·4 × 11 × 4·2)*
Main engines: 4 diesels (Packard) (Waukesha in modernised ships); 2 280 bhp; 2 shafts; cp propellers = 14 knots; *Dash, Detector, Direct* and *Dominant,* have 2 diesels (General Motors); 1 520 bhp (see *Modernisation* note)
Range, miles: 3 000 at 10 knots
Complement: 76 (6 officers, 70 enlisted men); 86 in NRF ships (3 officers, 36 enlisted active duty; 3 officers, 44 enlisted reserve) (see *Modernisation* note)

These ships were built on the basis of mine warfare experience in the Korean War (1950-53); 58 built for US service and 35 transferred upon completion to NATO navies.(One ship cancelled, MSO 497). They have wooden hulls and non-magnetic engines and other equipment. All surviving ships were built in private shipyards.
Initially designated as minesweepers (AM); reclassified as ocean minesweepers (MSO) in February 1955. Originally fitted with UQS 1 mine detecting sonar. Active MSOs serve as tenders to various research facilities.

Engineering: Diesel engines are fabricated of non-magnetic stainless steel alloy.

Modernisation: All the ocean minesweepers in commission during the mid-1960s were to have been modernised; estimated cost and schedule per ship were $5 million and ten months in shipyard. However, some of the early modernisations took as long as 26 months which, coupled with changes in mine countermeasures techniques, led to cancellation of programme after 13 ships were modernised: MSO 433, 437, 438, 441-443, 445, 446, 448, 449, 456, 488, and 490.
The modernisation provided improvements in mine detection, engines, communications, and habitability: four Waukesha Motor Co diesel engines installed (plus two or three diesel generators for sweep gear), SQQ 14 sonar with mine classification as well as detection capability provided, guns removed, habitability improved, and advanced communications equipment fitted; bridge structure in modernised ships extended around mast and aft to funnel.
Some MSOs have not received full modernisation.

Sonar: SQQ 14.

Transfers: Ships of this class serve in the navies of Belgium, France, Italy, Netherlands, Spain, and Uruguay.

PLEDGE *4/1979, USN (PHC (NAC) W. E. Kendall)*

7 MINESWEEPING BOATS (MSB)

MSB 15	**MSB 25**	**MSB 29**	**MSB 51**
MSB 16	**MSB 28**	**MSB 41**	

Displacement, tons: 30 light; 39 full load except MSB 29, 80 full load
Dimensions, feet (metres): 57·2 × 15·5 × 4 *(17·4 × 4·7 × 1·2)*
(MSB 29; 87 × 19 × 5·5 *(26·5 × 5·8 × 1·7)*
Guns: Several MG
Main engines: 2 geared diesels (Packard); 600 bhp; 2 shafts = 12 knots
Complement: 6 (enlisted men)

Wooden hull minesweepers intended to be carried to theatre of operations by large assault ships. From 1966 to 1972 they were used extensively in Viet-Nam for river minesweeping operations.
There were 49 minesweeping boats of this type built.
MSB 29 built to enlarged design by John Trumpy & Sons, Annapolis, Maryland, in an effort to improve seakeeping ability.

NAVAL RESERVE FORCE TRAINING MINE WARFARE SHIPS

Name/Hull No.	*NRF Homeport*	*Date of Assignment*
CONSTANT (MSO 427)	San Diego, Calif	May 1980
DASH (MSO 428)	Newport, RI	1 Mar 1976
DETECTOR (MSO 429)	Newport, RI	15 Aug 1977
DIRECT (MSO 430)	Charleston, SC	1 Sep 1971
DOMINANT (MSO 431)	Perth Amboy, NJ	1 Sep 1971
ENGAGE (MSO 433)	St. Petersburg, Fla	1 Aug 1974
ENHANCE (MSO 437)	Tacoma, Wash	May 1980
ESTEEM (MSO 438)	Seattle, Wash	1 Sep 1975
EXCEL (MSO 439)	San Francisco, Calif	1 July 1972
EXPLOIT (MSO 440)	Portland, Me	30 Sep 1973
EXULTANT (MSO 441)	St. Petersburg, Fla	1 July 1972
FEARLESS (MSO 442)	Charleston, SC	1 July 1974
FORTIFY (MSO 446)	Little Creek, Va	1 Aug 1974
IMPERVIOUS (MSO 449)	Mayport, Fla	1 Aug 1974
IMPLICIT (MSO 455)	Tacoma, Wash	1 July 1972
INFLICT (MSO 456)	Little Creek, Va	1 Aug 1974
PLUCK (MSO 464)	San Diego, Calif	1 July 1972
CONQUEST (MSO 488)	Seattle, Wash	1 Sep 1975
GALLANT (MSO 489)	San Francisco, Calif	1 July 1972
PLEDGE (MSO 492)	Seattle, Wash	May 1980
ADROIT (MSO 509)	Portsmouth, NH	15 Aug 1977
AFFRAY (MSO 511)	Portland, Me	30 June 1973

AUXILIARY SHIPS

The Auxiliary Ships of the US Navy are usually divided into two broad categories, underway replenishment ships (UNREP) and fleet support ships. UNREP ships carry out the direct support of deployed forces in the forward area of operations.
Most US Navy replenishment ships are fitted with helicopter platforms to allow the transfer of supplies by vertical replenishment (VERTREP). Helicopters are carried specifically for this purpose by the newer ammunition ships (AE), the combat store ships (AFS), the fast combat support ships (AOE), and replenishment oilers (AOR). Carrier-based helicopters are sometimes employed in this role.
Planned UNREP ship force levels provide a wartime capability to support deployed carrier and amphibious task groups in up to four or five locations simultaneously. This plan is based on the availability of some storage depots on foreign territory, and the use of Military Sealift Ships to carry fuels, munitions, and the stores from the USA or overseas sources for transfer to UNREP ships in overseas areas.
During peacetime some 16 to 18 UNREP ships normally are forward deployed in the Mediterranean, western Pacific and Indian Ocean areas in support of the 6th and 7th Fleets, respectively.
Fleet support ships provide primarily maintenance and related towing and salvage services at advanced bases and at ports in the USA. These ships normally do not provide fuel, munitions, or other supplies except when ships are alongside for maintenance.
Most fleet support ships operate from bases in the USA. The five Polaris/Poseidon/Trident submarine tenders (AS) are based at Holy Loch, Scotland; Kings Bay, Georgia; Charleston, South Carolina; and Apra harbour, Guam, with one ship generally in transit or overhaul. The Rota facility was disestablished in 1979. In addition, two support ships (AD/AR/AS type) generally are forward deployed in the Mediterranean and two in the western Pacific and Indian Ocean.
Underway replenishment ships and fleet support ships are mainly Navy manned and armed; however, an increasing number are being operated by the Military Sealift Command (MSC) with civilian crews. The latter ships are not armed and have T- prefix before their designations and are listed in the next section.

4 + 2 "YELLOWSTONE" and "SAMUEL GOMPERS" CLASSES: DESTROYER TENDERS (AD)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
SAMUEL GOMPERS	AD 37	Puget Sound Naval S.Y., Bremerton	9 July 1964	14 May 1966	1 July 1967	PA
PUGET SOUND	AD 38	Puget Sound Naval S.Y., Bremerton	15 Feb 1965	16 Sep 1966	27 Apr 1968	AA
YELLOWSTONE	AD 41	National Steel and S.B. Co, San Diego	2 June 1977	27 Jan 1979	31 May 1980	AA
ACADIA	AD 42	National Steel and S.B. Co, San Diego	14 Feb 1978	28 July 1979	Mar 1981	PA
CAPE COD	AD 43	National Steel and S.B. Co, San Diego	27 Jan 1979	2 Aug 1980	late 1981	Bldg
SHENANDOAH	AD 44	National Steel and S.B. Co, San Diego	2 Aug 1980	—	mid-1983	Bldg

Displacement, tons: 20 500 full load (20 224, AD 41-44)
Dimensions, feet (metres): 644 × 85 × 22·5 *(196·3 × 25·9 × 6·9)* (AD 37-38)
641·8 *(195·6)* (AD 41-44)
Guns: 4—20 mm (Mk 67) (AD 37-38); 2—40 mm Mk 14 (singles) and 2—20 mm Mk 67 (singles) (AD 41-44)
Missiles: 1 NATO Sea Sparrow system planned for AD 41 and later ships
Main engines: Steam turbines (De Laval); 20 000 shp; 1 shaft = 20 knots
Boilers: 2 (Combustion Engineering)
Complement: 1 824 (40 officers, 1 784 enlisted personnel including 4 officers and 96 enlisted women)

These are the first US destroyer tenders of post-World War II design. Also have facilities for servicing nuclear power plants. Services can be provided simultaneously to six guided-missile destroyers moored alongside. Basic hull design similar to "L. Y. Spear" and "Simon Lake" submarine tenders. Provided with helicopter platform and hangar; two 7 000 lb capacity cranes.
Samuel Gompers authorised in the FY 1964 new construction programme and *Puget Sound* in the FY 1965 programme. AD 39 and 40 cancelled.
AD 41 was authorised in the FY 1975 programme and AD 42 in the FY 1976 programme, AD 43 in the FY 1977 programme and AD 44 in the FY 1979 programme. A fifth ship (AD 45) is proposed. Estimated cost of AD 43 (ordered 30 September 1977) is $260·4 million and estimated cost of AD 44 is $318 million.
Puget Sound replaced *Albany* as 6th Fleet flagship in July 1980.

Commissioning: *Yellowstone* commissioned temporarily for trials and passage to East Coast on 28 February 1980 being fully commissioned on 31 May 1980. *Cape Cod* will have a similar arrangement.

Electronics: Fitted with OE-82 satellite communications antenna and WSC-3 transceiver.

Gunnery: Two 40 mm saluting guns (AD 37 and 38).

YELLOWSTONE *11/1979, National Steel and S.B. Co*

5 "DIXIE" CLASS: DESTROYER TENDERS (AD)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
DIXIE	AD 14	NY Shipbuilding Corp, NJ	25 Apr 1940	PA
PRAIRIE	AD 15	NY Shipbuilding Corp, NJ	5 Aug 1940	PA
PIEDMONT	AD 17	Tampa Shipbuilding Co, Florida	5 Jan 1944	AA
SIERRA	AD 18	Tampa Shipbuilding Co, Florida	20 Mar 1944	AA
YOSEMITE	AD 19	Tampa Shipbuilding Co, Florida	25 Mar 1944	AA

Displacement, tons: 9 450 standard; 17 190 to 18 000 full load
Dimensions, feet (metres): 530·5 × 73·3 × 25·5 *(161·7 × 22·3 × 7·8)*
Guns: 4—20 mm (single Mk 67)
Main engines: Steam turbines (New York S.B. Corp in AD 14 and 15; Allis Chalmers in remainder); 12 000 shp; 2 shafts = 18·2 knots
Boilers: 4 (Babcock & Wilcox)
Complement: 1 131 to 1 271

Launched on 27 May 1939, 9 December 1939, 7 December 1942, 23 February 1943 and 16 May 1943 respectively. Near sisters of "Ajax" and "Fulton" classes.
All five ships are active with *Dixie* the oldest ship currently in service with the US Navy except for the sail frigate *Constitution*. Two 40 mm saluting guns carried.

Electronics: All except *Dixie* fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Modernisation: All of these ships have been modernised under the FRAM II programme to service destroyers fitted with ASROC, improved electronics, helicopters, etc. Two or three 5-in guns and eight 40 mm guns removed during modernisation.

PRAIRIE *5/1979, Dr. Giorgio Arra*

1 "SHENANDOAH" CLASS: DESTROYER TENDER (AD)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
EVERGLADES	AD 24	Los Angeles S.B. & D.D. Co	25 May 1951	AR

Displacement, tons: 8 165 standard; 15 460 full load
Dimensions, feet (metres): 492 × 69·5 × 27·2 *(150 × 21·2 × 8·3)*
Guns: 2—3 in *(76 mm)*/50 (Mk 26)
Main engines: Steam turbines (General Electric); 8 500 shp; 1 shaft = 18·4 knots
Boilers: 2 Babcock & Wilcox
Complement: 825

Of modified C-3 design completed as destroyer tender. Launched 28 January 1945. In reserve as accommodation and depot ship at Philadelphia Navy Yard.

Gunnery: Original armament for "Shenandoah" class was two 5-in guns and eight 40 mm guns. Two 40 mm saluting guns.

Modernisation: Modernised under the FRAM II programme to service modernised destroyers fitted with ASROC, improved electronics, helicopters etc.

8 "KILAUEA" CLASS: AMMUNITION SHIPS (AE)

Name	No.	Builders	Commissioned	F/S
KILAUEA	T-AE 26	General Dynamics Corp, Quincy, Mass	10 Aug 1968	MSC
BUTTE	AE 27	General Dynamics Corp, Quincy, Mass	14 Dec 1968	AA
SANTA BARBARA	AE 28	Bethlehem Steel Corp, Sparrows Pt, Md	11 July 1970	AA
MOUNT HOOD	AE 29	Bethlehem Steel Corp, Sparrows Pt, Md	1 May 1971	PA
FLINT	AE 32	Ingalls S.B. Corp, Pascagoula, Miss	20 Nov 1971	PA
SHASTA	AE 33	Ingalls S.B. Corp, Pascagoula, Miss	26 Feb 1972	PA
MOUNT BAKER	AE 34	Ingalls S.B. Corp, Pascagoula, Miss	22 July 1972	AA
KISKA	AE 35	Ingalls S.B. Corp, Pascagoula, Miss	16 Dec 1972	PA

Displacement, tons: 18 088 full load (17 931, AE 26 and 27)
Dimensions, feet (metres): 564 × 81 × 28 *(171·9 × 24·7 × 8·5)*
Aircraft: 2 UH-46 Sea Knight cargo helicopters normally embarked
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33) (except *Kilauea*)
Main engines: Geared turbines (General Electric); 22 000 shp; 1 shaft = 20 knots
Boilers: 3 (Foster-Wheeler)
Complement: 411 (38 officers, 373 enlisted men)

Helicopter platform and hangar aft. AE 26 and 27 authorised in the FY 1965 new construction programme, AE 28 and 29 in the FY 1966, AE 32 and 33 in the FY 1967, and AE 34 and 35 in the FY 1968. AE 26 laid down 10 March 1966; AE 27, 21 July 1966; AE 28, 20 December 1966; AE 29, 8 May 1967; AE 32, 4 August 1969; AE 33, 10 November 1969; AE 34, 10 May 1970; AE 35, 4 August 1971. *Kilauea* manned by MSC since 1 October 1980.

Electronics: Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Gunnery: The 3-in guns are arranged in twin closed mounts forward and twin open mounts aft, between funnel and after booms. Two 20 mm Mk 15 CIWS to be fitted in AE 32-35.

Missiles: Plans to instal NATO Sea Sparrow cancelled.

Rockets: Mk 36 Chaffroc (RBOC) to be fitted in all but AE 26. Already fitted in AE 27.

FLINT *9/1980, Dr. Giorgio Arra*

7 "MARS" CLASS: COMBAT STORE SHIPS (AFS)

Name	No.	Builders	Commissioned	F/S
MARS	AFS 1	National Steel and S.B. Co, San Diego	21 Dec 1963	PA
SYLVANIA	AFS 2	National Steel and S.B. Co, San Diego	11 July 1964	AA
NIAGARA FALLS	AFS 3	National Steel and S.B. Co, San Diego	29 Apr 1967	PA
WHITE PLAINS	AFS 4	National Steel and S.B. Co, San Diego	23 Nov 1968	PA
CONCORD	AFS 5	National Steel and S.B. Co, San Diego	27 Nov 1968	PA
SAN DIEGO	AFS 6	National Steel and S.B. Co, San Diego	24 May 1969	AA
SAN JOSE	AFS 7	National Steel and S.B. Co, San Diego	23 Oct 1970	AA

Displacement, tons: 16 500 full load (1-3) 15 900 (remainder)
Dimensions, feet (metres): 581 × 79 × 24 *(177·1 × 24·1 × 7·3)*
Aircraft: 2 UH-46 Sea Knight helicopters normally assigned
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33) (8—3 in *(76 mm)* in AFS 4)
Main engines: Steam turbines (De Laval except AFS 6—Westinghouse); 22 000 shp; 1 shaft = 20 knots
Boilers: 3 (Babcock & Wilcox)
Complement: 486 (45 officers, 441 enlisted men)

"M" frames replace conventional king posts and booms, which are equipped with automatic tensioning devices. Five holds (one refrigerated). Cargo capacity 2 625 tons dry stores and 1 300 tons refrigerated stores (varies with specific loadings).
Some ships have Tacan fitted.
Mars authorised in the FY 1961 shipbuilding programme, *Sylvania* in FY 1962, *Niagara Falls* in FY 1964, *White Plains* and *Concord* in FY 1965, *San Diego* in FY 1966, *San Jose* in FY 1967.

Electronics: Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Rockets: Mk 36 Chaffroc (RBOC) to be fitted. Already in AFS 6.

MARS *3/1980, Dr. Giorgio Arra*

5 "SURIBACHI" and "NITRO" CLASSES: AMMUNITION SHIPS (AE)

Name	No.	Builders	Commissioned	F/S
SURIBACHI	AE 21	Bethlehem Steel Corp, Sparrows Pt, Md	17 Nov 1956	AA
MAUNA KEA	AE 22	Bethlehem Steel Corp, Sparrows Pt, Md	30 Mar 1957	NRF
NITRO	AE 23	Bethlehem Steel Corp, Sparrows Pt, Md	1 May 1959	AA
PYRO	AE 24	Bethlehem Steel Corp, Sparrows Pt, Md	24 July 1959	NRF
HALEAKALA	AE 25	Bethlehem Steel Corp, Sparrows Pt, Md	3 Nov 1959	PA

Displacement, tons: 7 470 light; 10 000 standard; 15 500 full load (21 and 22), 15 900-16 083 (rest)
Dimensions, feet (metres): 512 × 72 × 29 *(156·1 × 21·9 × 8·8)* (21 and 22; 502 *(153)*)
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: Geared turbines (Bethlehem); 16 000 shp; 1 shaft = 18 knots (AE 21 and 22); 20·6 (rest)
Boilers: 2 (Combustion Engineering)
Complement: 386 (16 officers, 370 enlisted men) (AE 21 and 22); 350 (20 officers, 330 enlisted men) (rest)

All five ships were modernised in 1960s, being fitted with high-speed transfer equipment, three holds configured for stowage of missiles and helicopter platform fitted aft (two after twin 3-in gun mounts removed).
Arrangements of twin 3-in gun mounts differ, some ships have them in tandem and others side-by-side.
Mauna Kea to NRF 1 October 1979 and *Pyro* 1 September 1980.

Electronics: Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Rockets: Mk 36 Chaffroc (RBOC) to be fitted in AE 24. Already in AE 21.

HALEAKALA *8/1979, Dr. Giorgio Arra*

1 MISCELLANEOUS (AG): Ex-MERCHANT DEEP SALVAGE SHIP

Name	No.	Builders	Completed	F/S
— (ex-M/V *Hughes Glomar Explorer*)	AG 193	Sun S.B. and Drydock Co, Chester, Pa	July 1973	MPR

Displacement, tons: 63 300 full load
Measurement, tons: 27 445 gross; 18 511 net; 39 705 deadweight
Dimensions, feet (metres): 618·8 × 115·7 × 46·7 *(188·6 × 35·3 × 14·3)*
Aircraft: Landing area for 1 medium helicopter; no support facilities
Main engines: 5 Nordberg diesels, 6 (General Electric) electric motors (diesel-electric drive); 13 200 shp; 2 shafts = 10·8 knots
Boilers: 4
Complement: 178

Built for the Summa Corporation 1972-73, this vessel was officially classified by the American Bureau of Shipping as a "survey ship". After her actual mission and career as a salvage ship for a Soviet "Golf" class submarine had been widely disclosed 1975-76, the US Navy took her over on 30 September 1976 and classified her as AG 193. She was then inactivated and transferred to the Maritime Administration on 17 January 1977 for lay-up at the reserve fleet in Suisun Bay, Cal. On 1 June 1978 she was leased to Global Marine Development Inc, Newport Beach, Cal. The company paid for all reactivation and overhaul costs and the cost of cocooning when returned to the navy. While on lease she was used for "scientific and mineral exploration and mining in the deep ocean". Fitted with three bow and two stern thrusters.
Returned to the navy on 25 April 1980 and transferred to the Maritime Administration for lay-up at Suisun Bay, California.

GLOMAR EXPLORER *1974, USN*

1 "COMPASS ISLAND" CLASS: MISCELLANEOUS (AG)

Name	No.	Builders	Commissioned	FIS
COMPASS ISLAND (ex-*Garden Mariner*)	AG 153 (ex-YAG 56)	New York S.B. Corporation, NJ	3 Dec 1956	MAR

Displacement, tons: 17 600 full load
Dimensions, feet (metres): 564 × 78 × 31 *(171·6 × 23·8 × 9·5)*
Main engines: Geared turbines (General Electric); 19 250 shp; 1 shaft = 20 knots
Boilers: 2 (Foster-Wheeler)
Complement: 250 (18 officers, 232 enlisted men)

Originally a "Mariner" class merchant ship (C4-S-1A type). Acquired by the Navy on 29 March 1956.
Converted by New York Naval Shipyard for the development of the fleet ballistic missile guidance and ship navigation systems.
Observation Island (AGM 23, ex-AG 154), a sister ship, serves with the Military Sealift Command.
Replaced by USNS *Vanguard* (T-AG 194) (see MSC section) and decommissioned at Norfolk on 1 May 1980. Transferred to Maritime Administration 4 September 1980 for lay-up at James River, Virginia.

COMPASS ISLAND — *6/1978, Wright and Logan*

1 "POINT BARROW" CLASS: AUXILIARY DEEP SUBMERGENCE SUPPORT SHIP (AGDS)

Name	No.	Builders	Commissioned	FIS
POINT LOMA (ex-*Point Barrow*)	AGDS 2 (ex-AKD 1)	Maryland S.B. & D.D. Co	28 Feb 1958	PA

Displacement, tons: 9 415 standard; 14 000 full load
Dimensions, feet (metres): 492 × 78 × 22 *(150 × 23·8 × 6·7)*
Guns: None
Main engines: Steam turbines (Westinghouse); 6 000 shp; 2 shafts = 15 knots
Boilers: 2 (Foster-Wheeler)
Complement: 160 (including scientific personnel and submersible operators)

A docking ship designed to carry cargo, vehicles, and landing craft (originally designated AKD). Launched on 25 May 1957, commissioned in USN as above. Decommissioned and delivered to Military Sea Transportation Service (now Military Sealift Command) on 29 May 1958. Maritime Administration S2-ST-23A design; winterised for arctic service. Fitted with internal ramp and garage system.
Subsequently refitted with hangar over docking well and employed in transport of large booster rockets to Cape Kennedy Space Center. Transferred from Military Sealift Command to Navy on 28 February 1974 for modification to support deep submergence vehicles. Placed in commission "special" on 28 February 1974 as the AGDS 2; renamed *Point Loma*. Placed in commission on 30 April 1975. Aviation gas capacity increased to approximately 100 000 gallons (US) to support *Trieste II* which uses avgas for flotation.

Classification: The designation AGDS was established on 3 January 1974.

Electronics: Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

POINT LOMA — *7/1979, Dr. Giorgio Arra*

1 CONVERTED "RALEIGH" CLASS: COMMAND SHIP (AGF)

Name	No.	Builders	Laid down	Launched	Commissioned	FIS
LA SALLE	AGF 3 (ex-LPD 3)	New York Naval Shipyard	2 Apr 1962	3 Aug 1963	22 Feb 1964	AR

Displacement, tons: 8 040 light; 13 900 full load
Dimensions, feet (metres): 521·8 × 104 × 21 *(159·1 × 31·7 × 6·4)*
Guns: 8—3 in *(76 mm)*/50 (Mk 33 twin)
Main engines: Steam turbines (De Laval); 24 000 shp; 2 shafts
Boilers: 2 (Babcock & Wilcox)
Speed, knots: 20
Complement: 440 (25 officers, 415 enlisted men)
Flag accommodation: 59 (12 officers, 47 enlisted men)

La Salle is a former amphibious transport dock (LPD) of the "Raleigh" class. Authorised in the FY 1961 new construction programme. *La Salle* served as an amphibious ship from completion until 1972; the ship retains an amphibious assault capability.
La Salle serves as flagship for the US commander Middle East Force, operating in the Persian Gulf, Arabian Sea and Indian Ocean.
La Salle having been temporarily relieved by *Coronado* AGF 11, has returned to the USA for an extensive overhaul at Philadelphia Naval Shipyard from 27 January 1981 to early 1982. The overhaul will cost approximately $60 million.

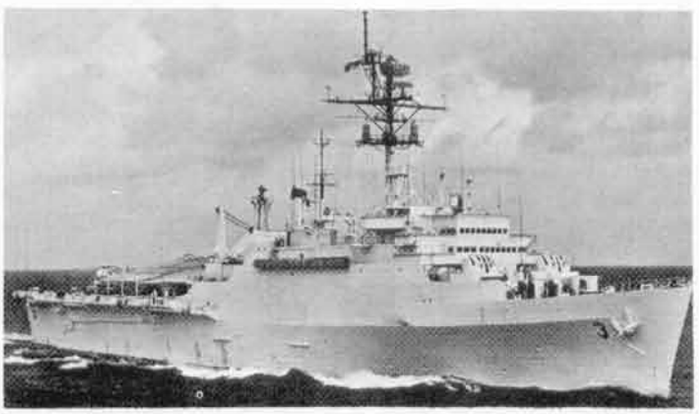
Conversion: Converted in 1972 at Philadelphia Navy Yard. Flag command and communications facilities installed; additional air-conditioning fitted; painted white to help retard heat of Persian Gulf area. Reclassified as a flagship and designated AGF 3 on 1 July 1972 keeping previous "3" hull number.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Gunnery: Has two 40 mm saluting guns. To be fitted with 20 mm Mk 16 CIWS.

Radar: Search: SPS 10 and 40.

Rockets: One Mk 36 Chaffroc (RBOC) to be fitted.



LA SALLE — *8/1975, USN*

1 "UNITED STATES" CLASS HOSPITAL SHIP (AH): PROPOSED

To fulfil a requirement for the Rapid Deployment Force (RDF), it was proposed by the Carter Administration to convert the inactivated ocean liner, SS *United States* to a 2 500-bed capacity hospital ship. Cost of the conversion approximately $390 million with at least 18 months in the shipyard required. Advance procurement of $10 million has been requested in the FY 1982 programme, with the conversion costs of $380 million to be requested in the FY 1983 programme. The Reagan Administration may drop this conversion in favour of smaller conversions of C3, C4 or LNG hulls. AH 19 is the next available hull number for assignment.

1 "HAVEN" CLASS: HOSPITAL SHIP (AH)

Name	No.	Builders	Commissioned	FIS
SANCTUARY (ex-*Marine Owl*)	AH 17	Sun S.B. & D.D. Co, Chester	20 June 1945	MAR

Displacement, tons: 11 141 standard; 15 100 full load
Dimensions, feet (metres): 520 × 71·5 × 22 *(158·5 × 21·8 × 6·7)*
Main engines: Steam turbines (General Electric); 9 000 shp; 1 shaft = 18·33 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 487 (67 officers, 420 enlisted men)

Sanctuary is the survivor of six hospital ships (AH) of the "Haven" class. Built on C4-S-B2 merchant hull and launched on 15 August 1944. *Sanctuary* recommissioned from reserve in 1966 for service off Viet-Nam; decommissioned on 15 December 1971 for modification to "dependent support ship" to be homeported in Piraeus, Greece. However, she was not deployed to Greece. Transferred to Maritime Administration, James River on 23 August 1978 for laying up. Plans to reactivate *Sanctuary* for the Rapid Deployment Force have been dropped due to the reportedly poor material condition of the ship.

Radar: SPS 10B.

SANCTUARY — *1974, USN*

3 + 2 "CIMARRON" CLASS: OILERS (AO)

Name	No.	Laid down	Launched	Commissioned	F/S
CIMARRON	AO 177	18 May 1978	28 Apr 1979	10 Jan 1981	PA
MONONGAHELA	AO 178	15 Aug 1978	4 Aug 1979	May 1981	—
MERRIMACK	AO 179	16 July 1979	17 May 1980	Aug 1981	—
WILLAMETTE	AO 180	4 Aug 1980	Apr 1981	Feb 1982	Bldg
PLATTE	AO 186	2 Feb 1981	Oct 1981	Sep 1982	Bldg

Displacement, tons: 27 500 full load
Dimensions, feet (metres): 592 × 88 × 35 *(180·5 × 26·8 × 10·7)*
Guns: 2—20 mm Phalanx CIWS
Main engine: 1 geared turbine; 24 000 shp; 1 shaft = 20 knots
Boilers: 2
Complement: 135

All built by Avondale Shipyards, Westwego, Louisiana. Significantly smaller than the previous "Neosho" class; the newer ships are "sized" to provide two complete refuellings of a fossil-fuelled aircraft carrier and six to eight accompanying destroyers. The lead ship was requested in the FY 1975 new construction programme but was not approved by Congress. Subsequently, two ships (AO 177 and AO 178) approved in FY 1976, one ship in FY 1977 (AO 179) and two ships in FY 1978 (AO 180 and 186). Fifteen more of this class were planned or proposed but were cancelled in 1979.
Each ship has a capacity of 120 000 barrels and has a helicopter platform aft.

Classification: AOT 181 is USNS *Potomac;* AOT 182-185 assigned to "Columbia" class. All listed under Military Sealift Command section.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Rockets: One Mk 36 Chaffroc (Super RBOC) to be fitted. Already in AO 177.

CIMARRON *11/1980, USN*

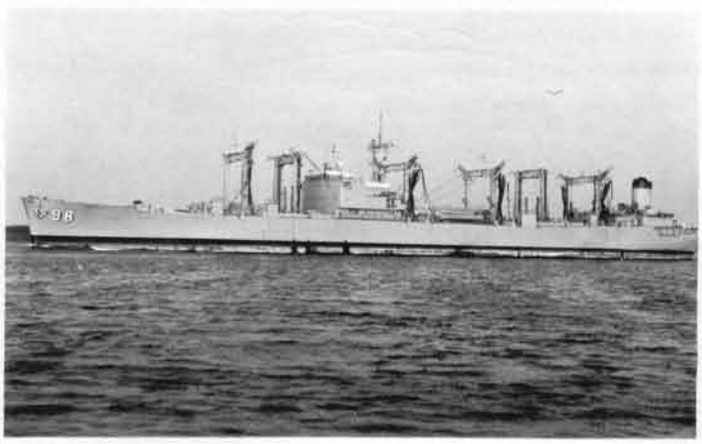
3 "JUMBOISED CIMARRON" CLASS: OILERS (AO)

Name	No.	Launched	Commissioned	F/S
ASHTABULA	AO 51	22 May 1943	7 Aug 1943	PA
CALOOSAHATCHEE	AO 98	2 June 1945	10 Oct 1945	AA
CANISTEO	AO 99	6 July 1945	3 Dec 1945	AA

Displacement, tons: 34 040 full load
Dimensions, feet (metres): 644 × 75 × 35 *(196·3 × 22·9 × 10·7)*
Guns: 4—3 in *(76 mm)*/50 (single Mk 26)
Main engines: Geared turbines (Bethlehem); 13 500 shp; 2 shafts = 18 knots
Boilers: 4 (Foster-Wheeler)
Complement: 317 (19 officers and 298 enlisted men)

All built by Bethlehem Steel Co, Sparrows Point, Maryland. Originally T3-S2-A1 oilers, converted during mid-1960s under "jumbo" programme. Enlarged mid-sections added to increase cargo capacity to approximately 143 000 barrels plus 175 tons of munitions and 100 tons refrigerated stores. No helicopter platform fitted.

Radar: RM 1650/6X (AO 98).



CALOOSAHATCHEE *1979, J. A. Verhoog*

4 "SACRAMENTO" CLASS: FAST COMBAT SUPPORT SHIPS (AOE)

Name	No.	Laid down	Launched	Commissioned	F/S
SACRAMENTO	AOE 1	30 June 1961	14 Sep 1963	14 Mar 1964	PA
CAMDEN	AOE 2	17 Feb 1964	29 May 1965	1 Apr 1967	PA
SEATTLE	AOE 3	1 Oct 1965	2 Mar 1968	5 Apr 1969	AA
DETROIT	AOE 4	29 Nov 1966	21 June 1969	28 Mar 1970	AA

Displacement, tons: 19 200 light; 51 400-53 600 full load
Dimensions, feet (metres): 793 × 107 × 39·3 *(241·7 × 32·6 × 12)*
Aircraft: 2 UH-46 Sea Knight normally assigned
Missiles: One Mk 29 Nato Sea Sparrow System (AOE 1, 2 and 4)
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33) (4 twins in AOE 3)
Main engines: Geared turbines (General Electric); 100 000 shp; 2 shafts = 26 knots
Boilers: 4 (Combustion Engineering)
Complement: 600 (33 officers, 567 enlisted men) (AOE 1 and 2);
680 (33 officers, 647 enlisted men) (AOE 3 and 4)

These ships provide rapid replenishment at sea of petroleum, munitions, provisions, and fleet freight. Fitted with helicopter platform, internal arrangements, and large hangar for vertical replenishment operations (VERTREP). Cargo capacity 177 000 barrels plus 2 150 tons munitions, 500 tons dry stores, 250 tons refrigerated stores (varies with specific loadings).
Built by Puget Sound Naval Shipyard except *Camden* by New York Shipbuilding Corporation, Camden, New Jersey. *Sacramento* authorised in the FY 1961 new construction programme; *Camden* in FY 1963, *Seattle* in FY 1965, and *Detroit* in FY 1966. Approximate cost of *Camden* was $70 million. Each ship is to undergo a SLEP overhaul beginning in the FY 1984 programme.

Appearance: These ships can be distinguished from the smaller "Wichita" class replenishment oilers by their larger superstructures and funnel, helicopter deck at lower level, and hangar structure aft of funnel.

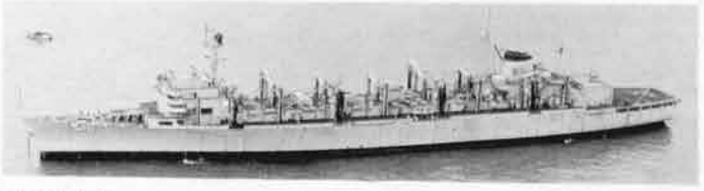
Engineering: *Sacramento* and *Camden* have machinery taken from the cancelled battleship *Kentucky* (BB 66).

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: One Mk 91 MFCS.

Gunnery: Two Phalanx 20 mm CIWS Mk 16 to be fitted. Already in AOE 1.

Rockets: One Mk 36 Chaffroc (Super RBOC) to be fitted.



SACRAMENTO *1978, Dr. Giorgio Arra*

7 "WICHITA" CLASS: REPLENISHMENT OILERS (AOR)

Name	No.	Laid down	Launched	Commissioned	F/S
WICHITA	AOR 1	18 June 1966	18 Mar 1968	7 June 1969	PA
MILWAUKEE	AOR 2	29 Nov 1966	17 Jan 1969	1 Nov 1969	AA
KANSAS CITY	AOR 3	20 Apr 1968	28 June 1969	6 June 1970	PA
SAVANNAH	AOR 4	22 Jan 1969	25 Apr 1970	5 Dec 1970	AA
WABASH	AOR 5	21 Jan 1970	6 Feb 1971	20 Nov 1971	PA
KALAMAZOO	AOR 6	28 Oct 1970	11 Nov 1972	11 Aug 1973	AA
ROANOKE	AOR 7	19 Jan 1974	7 Dec 1974	30 Oct 1976	PA

Displacement, tons: 37 360 full load
Dimensions, feet (metres): 659 × 96 × 33·3 *(200·9 × 29·3 × 10·2)*
Aircraft: 2 UH-46 Sea Knight can be embarked
Missiles: 1 NATO Sea Sparrow system (Mk 29) in *Roanoke* and *Kansas City* (see note)
Guns: 4—3 in *(76 mm)*/50 (twin) (Mk 33) (in AOR 1, 5-6);
4—20 mm Mk 67 (single) (AOR 3, 6 and 7)
Main engines: Geared turbines (General Electric); 32 000 shp;
2 shafts = 20 knots (18 knots on 2 boilers)
Boilers: 3 (Foster-Wheeler)
Complement: 390 (27 officers, 363 enlisted men); 457 (30 and 427 in AOR 7)

These ships provide rapid replenishment at sea of petroleum and munitions with a limited capacity for provision and fleet freight. Fitted with helicopter platform and internal arrangement for vertical replenishment operations (VERTREP), but no hangar originally provided: all will subsequently be fitted with hangar. Cargo capacity 175 000 barrels of liquid fuels plus 600 tons munitions, 425 tons dry stores, 150 tons refrigerated stores.
All built by General Dynamics Corporation, Quincy Massachusetts except AOR 7 by National Steel and Shipbuilding Co, San Diego, California. *Wichita* and *Milwaukee* authorised in the FY 1965 new construction programme, *Kansas City* and *Savannah* in FY 1966, *Wabash* and *Kalamazoo* in FY 1967, and *Roanoke* in FY 1972. Approximate cost of *Milwaukee* was $27·7 million. An eighth ship of this class is proposed for the mid-1980s.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Fire control: One Mk 91 MFCS (AOR 3 and 7)—to be fitted in remainder.

Gunnery: Two 20 mm Mk 16 CIWS to be fitted. Already in AOR 4.

Missiles: All ships to receive one NATO Sea Sparrow system (Mk 29).

Rockets: One Mk 36 Chaffroc (RBOC) to be fitted. Already in AOR 1 and 6.

SAVANNAH *10/1980, L. and L. van Ginderen*

6 "ADMIRAL W. S. BENSON" CLASS TRANSPORTS (AP)/ MISCELLANEOUS (IX)

Name	*No.*	*Commissioned*	*F/S*
GENERAL ALEXANDER M. PATCH (ex-*Admiral R. E. Coontz*)	AP 122	21 Nov 1944	MAR
GENERAL SIMON B. BUCKNER (ex-*Admiral E. W. Eberle*)	AP 123	24 Jan 1945	MAR
GENERAL NELSON M. WALKER (ex-*Admiral H. T. Mayo*)	AP 125	24 Apr 1945	MAR
GENERAL MAURICE ROSE (ex-*Admiral Hugh Rodman*)	AP 126	10 July 1945	MAR
— (ex-*General William O. Darby*, ex-*Admiral W. S. Sims*)	AP 127	27 Sep 1945	MAR
GENERAL HUGH J. GAFFEY (ex-*Admiral W. L. Capps*)	IX 507 (ex AP 121)	18 Sep 1944	PSA

Displacement, tons: 22 574 full load (except AP 125: 22 379); 12 603-12 657 light (except AP 125: 10 798)
Dimensions, feet (metres): 609 × 76 × 29 *(185·6 × 23·2 × 8·8)*
Main engines: Turbo-electric (General Electric); 18 000 shp; 4 shafts = 21 knots
Boilers: 4 (Combustion Engineering)
Complement: 2 076 (499 officers, 1 577 enlisted men) (includes troops)

All built to a Maritime Commission (later Maritime Administration) P2-SE2-R1 design at Bethlehem Steel Co, Alameda. IX 507 reclassified from AP 121 on 1 November 1978 and reacquired for service as a barracks ship at the Bremerton Naval Shipyard, Washington for the crew of *Enterprise* (CVN 65). Placed "in service" in November 1978. *Gaffey* is scheduled to remain in service at least through FY 1983. Remaining ships transferred to Maritime Administration, James River between 16 April 1970 and 30 June 1970 for lay-up. All remain on the Naval Vessel Register.

3 "GENERAL JOHN POPE" CLASS TRANSPORTS (AP)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
GENERAL JOHN POPE	AP 110	Federal S.B. & D.D. Co, Kearny	5 Aug 1943	MPR
GENERAL W. H. GORDON	AP 117	Federal S.B. & D.D. Co, Kearny	29 June 1944	MAR
GENERAL WILLIAM WEIGEL (ex-*General C. H. Barth*)	AP 119	Federal S.B. & D.D. Co, Kearny	6 Jan 1945	MPR

Displacement, tons: 20 175 full load
Dimensions, feet (metres): 623 × 76 × 26 *(189·9 × 23·1 × 7·9)*
Main engines: Geared turbines (De Laval); 17 000 shp; 2 shafts = 20 knots
Boilers: 4 (Babcock & Wilcox)
Complement: 4 360 (246 officers, 4 114 enlisted men) (includes troops)

Built to a Maritime Commission P2-S2-R2 design. All laid up under the Maritime Administration.

"GENERAL JOHN POPE" Class — *USN*

1 "BARRETT" CLASS TRANSPORT (AP)

Name	*No.*	*Completed*	*F/S*
GEIGER	AP 197	11 Sep 1952	Loan

Displacement, tons: 19 600 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Main engines: Geared turbines (General Electric); 13 750 bhp; 1 shaft = 19 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 2 149 (426 officers, 1 723 enlisted men) (includes troops)

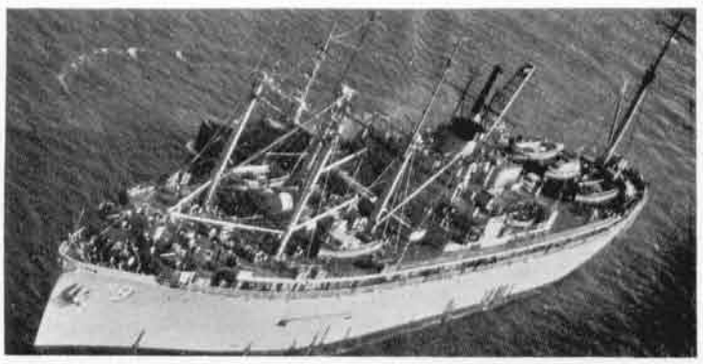
Built by New York Shipbuilding Corp, Camden, New Jersey to a Maritime Administration P2-S1-DN3 design. *Geiger* acquired by US Navy from the Maritime Administration on 13 September 1952. Operated by the Military Sealift Command until 27 April 1971 when she was transferred to the Maritime Administration, Suisin Bay for lay-up. Two sisters serve as training ships for Merchant Marine Academies. *Geiger* was reacquired and loaned to the Massachusetts Maritime Academy on 12 February 1980 replacing ex-*Henry Gibbins* AP 183. Renamed *Bay State*.

1 (Stricken) REPAIR SHIP (AR) "DELTA" CLASS

Name	*No.*	*Builders*	*Commissioned*	*F/S*
DELTA (ex-*Hawaiian Packer*)	ex-AR 9 (ex-AK 29)	Newport News S.B. & D.D. Co, Virginia	15 June 1941	None

Displacement, tons: 8 975 standard; 13 009 full load
Dimensions, feet (metres): 490·5 × 69·5 × 24·3 *(149·5 × 21·2 × 7·4)*
Guns: 4—3 in *(76 mm)*/50 Mk 26 (single)
Main engines: Steam turbines (Newport News); 8 500 shp; 1 shaft = 16 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 1 003 (46 officers, 957 enlisted men)

C-3 type. Launched in 1941. *Delta* decommissioned on 20 June 1970. Stricken 1 October 1977 but retained indefinitely for use as accommodation and depot ship at Bremerton, Washington.



DELTA — *1969, USN*

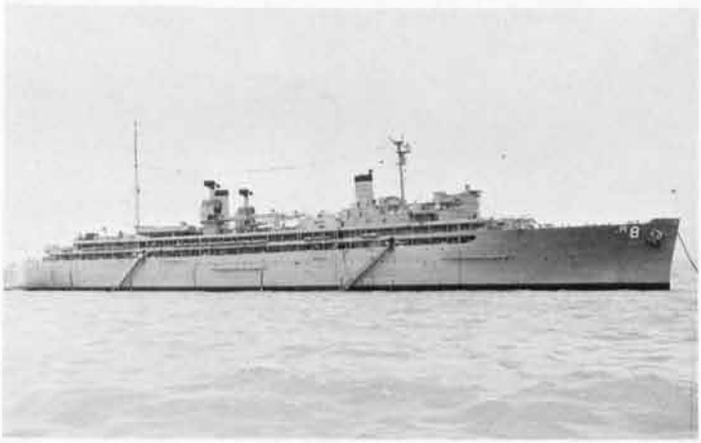
4 "AJAX" CLASS: REPAIR SHIPS (AR)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
VULCAN	AR 5	New York S.B. Corp	16 June 1941	AA
AJAX	AR 6	Los Angeles S.B. & D.D. Corp	30 Oct 1942	PA
HECTOR	AR 7	Los Angeles S.B. & D.D. Corp	7 Feb 1944	PA
JASON	AR 8 (ex-ARH 1)	Los Angeles S.B. & D.D. Corp	19 June 1944	PA

Displacement, tons: 9 140 standard; 16 160-16 380 full load
Dimensions, feet (metres): 529·3 × 73·3 × 23·3 *(161·3 × 22·3 × 7·1)*
Guns: 4—20 mm (singles) (Mk 67)
Main engines: Steam turbines (Allis-Chalmers except AR 5—New York S.B. Corp); 11 000 shp; 2 shafts = 19·2 knots
Boilers: 4 (Babcock & Wilcox)
Complement: 1 336 (63 officers, 1 273 enlisted men)

Vulcan was built under the 1939 programme and the other three under the 1940 programme. Launched on 14 December 1940, 22 August 1942, 11 November 1942 and 3 April 1943 respectively. All carry equipment to undertake repairs of every description. *Jason*, originally designated ARH 1 and rated as heavy hull repair ship, was reclassified AR 8 on 9 September 1957.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.



JASON — *6/1979, Dr. Giorgio Arra*

1 "ACHELOUS" CLASS: REPAIR SHIP: SMALL (ARL)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
SPHINX	ARL 24 (ex-LST 963)	Bethlehem Steel Co, Higham, Mass	12 Dec 1944	PR

Displacement, tons: 1 625 light; 4 325 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 8—40 mm (quad)
Main engines: Diesels (General Motors); 1 800 bhp; 2 shafts = 12 knots
Complement: 266 (18 officers, 248 enlisted men)

Tank landing ship converted during construction to landing craft repair ship (ARL). Rerated as Repair Ship, Small (ARL) on 11 January 1978. Launched 18 November 1944. Fitted with machine shops, parts storage, lifting gear, etc and 60 ton capacity booms. Caters for small amphibious, minesweeping, and riverine craft. Reactivated during Viet-Nam War.

Fire control: Two Mark 51 directors.

Transfers: Former US Navy LSTs modified to fleet support ships (AGP-ARB-ARL-ARVE) are operated by the navies of Greece, Indonesia, South Korea, Malaysia, Philippines, Taiwan, Turkey and Venezuela.

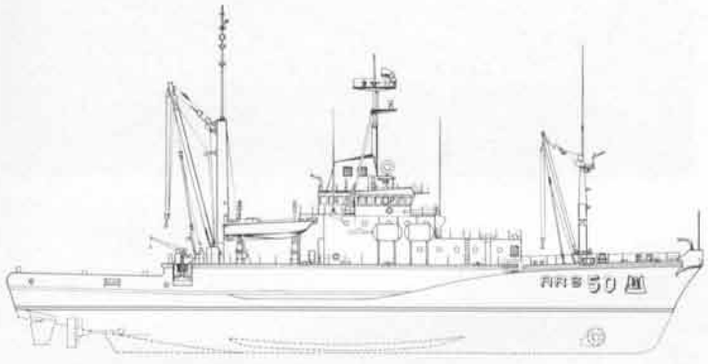
SPHINX — *1968, USN*

0 + 1 + 4 "IMPROVED BOLSTER" CLASS: SALVAGE SHIPS (ARS) PROPOSED

ARS 50-52 +2

Displacement, tons: 2 880 full load
Dimensions, feet (metres): 255 × 50 × 15 *(77·7 × 15·2 × 4·6)*
Main engines: Diesels; 4 200 shp; 2 shafts = 14 knots
Range, miles: 8 000 at 12 knots
Complement: 87

This class is essentially an updated "Bolster" class ARS which requires only a moderate amount of development effort, primarily to satisfy new standards of habitability, galley, messing, medical and storeroom areas. The design will follow conventional commercial and Navy design criteria. Prototype approved in the FY 1981 programme at a cost of $93 million. Two requested in the FY 1982 programme and one in both FY 1983 and FY 1984 programmes. The FY 1981 ship scheduled to commission in FY 1984. The CNO has determined that the future salvage ship force level requirements will consist of the three "Edenton" class ATS and five ships of this class. Equipped with 500 hp bow thruster. Bollard pull 53·6 tons.



"IMPROVED BOLSTER" Class *1980, USN*

10 "DIVER" and "BOLSTER" CLASSES: SALVAGE SHIPS (ARS)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
PRESERVER	ARS 8	Basalt Rock Co, Napa, Calif	11 Jan 1944	NRF
CURB	ARS 21	Basalt Rock Co, Napa, Calif	1944	Loan
CLAMP	ARS 33	Basalt Rock Co, Napa, Calif	23 Aug 1943	MPR
GEAR	ARS 34	Basalt Rock Co, Napa, Calif	24 Sep 1943	Loan
BOLSTER	ARS 38	Basalt Rock Co, Napa, Calif	1 May 1945	PA
CONSERVER	ARS 39	Basalt Rock Co, Napa, Calif	9 June 1945	PA
HOIST	ARS 40	Basalt Rock Co, Napa, Calif	21 July 1945	AA
OPPORTUNE	ARS 41	Basalt Rock Co, Napa, Calif	5 Oct 1945	AA
RECLAIMER	ARS 42	Basalt Rock Co, Napa, Calif	20 Dec 1945	PA
RECOVERY	ARS 43	Basalt Rock Co, Napa, Calif	15 May 1946	AA

Displacement, tons: 1 530 standard; 1 970 full load (ARS 38-43, 2 045)
Dimensions, feet (metres): 213·5 × 44 (except ARS 8, 41) × 13 *(65·1 × 13·4 (12·5) × 4)*
Guns: 2—20 mm (Mk 68 except ARS 39 and 41, Mk 67)
Main engines: Diesel-electric (Cooper Bessemer); (Caterpillar in ARS 38, 39, 42); 3 060 shp; 2 shafts = 14·8 knots
Complement: 105

Equipped with compressed air diving equipment. Early ships have 8 ton and 10 ton capacity booms; later ships have 10 ton and 20 ton booms. Bollard pull 22·3 tons.
ARS 38 and later ships are of a slightly different design, known as the "Bolster" class.
Preserver (ARS 8) transferred to Naval Reserve Force on 1 November 1979.
Escape decommissioned September 1978 and transferred to Maritime Administration on 9 July 1979 for lay-up at James River. Transferred to US Coast Guard on 4 December 1980.
Gear is operated by a commercial firm in support of Navy activities; *Curb* ARS 21 on loan to private salvage firm, supports naval requirements as needed. *Clamp* was stricken from the Navy List in 1963 but reacquired in 1973 and is still laid up in Maritime Administration Reserve Fleet.

Electronics: *Reclaimer* fitted with OE-82 satellite communications antenna and SSR-1 receiver.

CONSERVER *1/1980, Dr. Giorgio Arra*

5 "L. Y. SPEAR" and "EMORY S. LAND" CLASSES: SUBMARINE TENDERS (AS)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
L. Y. SPEAR	AS 36	General Dynamics Corp, Quincy	28 Feb 1970	AA
DIXON	AS 37	General Dynamics Corp, Quincy	7 Aug 1971	PA
EMORY S. LAND	AS 39	Lockheed S.B. & Cons Co, Seattle	7 July 1979	AA
FRANK CABLE	AS 40	Lockheed S.B. & Cons Co, Seattle	5 Feb 1980	AA
McKEE	AS 41	Lockheed S.B. & Cons Co, Seattle	29 Aug 1981	—

Displacement, tons: 13 000 standard (13 840, later ships); 22 640 full load (AS 36 and AS 37); 23 000 (AS 39-41)
Dimensions, feet (metres): 643·8 × 85 × 28·5 *(196·2 × 25·9 × 8·7)* (645·7 *(196·7)* in later ships)
Guns: 2—40 mm (Mk 19 single) (AS 39-41); 4—20 mm (Mk 67 single)
Main engines: Steam turbines (General Electric); 20 000 shp; 1 shaft = 20 knots
Boilers: 2 (Foster-Wheeler)
Range, miles: 10 000 at 12 knots
Complement: 1 348 (96 officers, 1 252 enlisted men) (AS 36 and 37); 1 158 (50 officers, 1 108 enlisted men) (AS 39-41)
Flag accommodation: 69 (25 officers, 44 enlisted men)

These ships are the first US submarine tenders designed specifically for servicing nuclear-propelled attack submarines. Basic hull design similar to "Samuel Gompers" and "Simon Lake" classes tenders. Provided with helicopter deck but no hangar. Each ship can simultaneously provide services to four submarines moored alongside. AS 39 and later ships ("Emory S. Land" class) are especially configured to support "SSN 688" class submarines.
L. Y. Spear authorised in the FY 1965 shipbuilding programme, laid down 5 May 1966 and launched 7 September 1967; *Dixon* authorised in the FY 1966, laid down 7 September 1967 and launched 20 June 1970; AS 38 of FY 1969 not built to provide funds for cost increases in other ship programmes. Cancelled 27 March 1969. *Emory S. Land* authorised in FY 1972, and *Frank Cable* in FY 1973 both laid down on 2 March 1976 and launched on 4 May 1977 and 14 January 1978 respectively. *McKee* authorised FY 1977, ordered 29 April 1977 laid down 14 January 1978 and launched 16 February 1980. No additional submarine tenders planned through FY 1986. Estimated cost of AS 41 is $260·9 million.

Class: AS 39 in reduced commission from 23 March 1979, AS 40 from 20 October 1979 both for trials and passage. In full commission from dates shown above.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

EMORY S. LAND *2/1979, Jim Davis, Seattle*

2 "SIMON LAKE" CLASS: SUBMARINE TENDERS (AS)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
SIMON LAKE	AS 33	Puget Sound Naval Shipyard	7 Nov 1964	AA
CANOPUS	AS 34	Ingalls S.B. Co, Pascagoula	4 Nov 1965	AA

Displacement, tons: 19 934 full load (AS 33); 21 089 (AS 34)
Dimensions, feet (metres): 643·7 × 85 × 30 *(196·2 × 25·9 × 9·1)*
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
Main engines: Steam turbines (De Laval); 20 000 shp; 1 shaft = 20 knots
Boilers: 2 (Combustion Engineering)
Complement: 1 428 (90 officers, 1 338 men) (AS 33); 1 421 (95 officers, 1 326 enlisted men) (AS 34)

These ships are designed specifically to service fleet ballistic missile submarines (SSBN), with three submarines alongside being supported simultaneously.
Simon Lake was authorised in the FY 1963 new construction programme, laid down on 7 January 1963 and launched 8 February 1964. *Canopus* was authorised in FY 1964, laid down on 2 March 1964 and launched on 12 February 1965.

Conversions: Conversions for Poseidon C-3 missile handling and repairing and support of related systems carried out at Puget Sound Navy yard as follows: *Canopus*, completed 3 February 1970; *Simon Lake*, completed 9 March 1971.
Retrofitting for support of Trident C4 missiles carried out in *Simon Lake* under FY 1978 programme. *Canopus* to be similarly converted in FY 1984.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

CANOPUS *1966, USN*

2 "HUNLEY" CLASS: SUBMARINE TENDERS (AS)

Name	No.	Builders	Commissioned	F/S
HUNLEY	AS 31	Newport News S.B. & D.D. Co	16 June 1962	PA
HOLLAND	AS 32	Ingalls S.B. Co, Pascagoula	7 Sep 1963	AA

Displacement, tons: 10 500 standard; 19 000 full load
Dimensions, feet (metres): 599 × 83 × 27 *(182·6 × 25·3 × 8·2)*
Guns: 4—20 mm (singles)
Main engines: Diesel-electric (6 Fairbanks-Morse diesels); 15 000 bhp; 1 shaft = 19 knots
Complement: 2 568 (144 officers, 2 424 enlisted men)

These are the first US submarine tenders of post-World War II construction; they are designed specifically to provide repair and supply services to fleet ballistic missile submarines (SSBN). Have 52 separate workshops to provide complete support. Helicopter platform fitted aft but no hangar. Both ships originally fitted with a 32 ton capacity hammerhead crane; subsequently refitted with two amidships cranes as in "Simon Lake" class.
Hunley authorised in the FY 1960 shipbuilding programme, laid down on 28 November 1960 and launched on 28 September 1961; *Holland* authorised in the FY 1962 programme, laid down on 5 March 1962 and launched on 19 January 1963. Former ship cost $24 359 800.

Conversions: Conversions to provide for Poseidon C-3 missile handling and repairing and support of related systems carried out at Puget Sound Navy Yard as follows: *Hunley*, completed 22 January 1974; *Holland*, completed 20 June 1975.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

HOLLAND *USN*

FULTON *USN*

5 "FULTON" and "PROTEUS" CLASSES: SUBMARINE TENDERS (AS)

Name	No.	Builders	Commissioned	F/S
FULTON	AS 11	Mare Island Navy Yard	12 Sep 1941	AA
SPERRY	AS 12	Moore S.B. & D.D. Co, Oakland	1 May 1942	PA
NEREUS	AS 17	Mare Island Navy Yard	27 Oct 1945	PR
ORION	AS 18	Moore S.B. & D.D. Co, Oakland	30 Sep 1943	AA
PROTEUS	AS 19	Moore S.B. & D.D. Co, Oakland	31 Jan 1944	PA

Displacement, tons: 9 734 standard; 16 230-17 020 full load (19 200, AS 19)
Dimensions, feet (metres): 530·5 (except *Proteus* 574·5) × 73·3 × 25·5
(161·7 (Proteus 175·1) × 22·3 × 7·8)
Guns: 2—5 in *(127 mm)*/38 in AS 17; 4—20 mm (Mk 67) (single) in active ships, 2—20 mm (Mk 24) (twin) in AS 17 only
Main engines: Diesel-electric (General Motors) (Allis Chalmers in AS 19); 11 200 bhp; 2 shafts = 15·4 knots
Complement: 1 286-1 937 (except *Proteus* 1 300 (86 officers, 1 214 enlisted men))

These venerable ships are contemporaries of the similar-design "Dixie" class destroyer tenders and the "Ajax" class repair ships. Launched on 27 December 1940, 17 December 1941, 12 February 1945, 14 October 1942 and 12 November 1942 respectively. As built, they carried the then-standard large auxiliary armament of four 5-in guns plus eight 40 mm guns (twin).

Conversion: *Proteus* AS 19 was converted at the Charleston Naval Shipyard, under the Fiscal Year 1959 conversion programme, at a cost of $23 million to service nuclear-powered fleet ballistic missile submarines (SSBN). Conversion was begun on 19 January 1959 and she was recommissioned on 8 July 1960. She was lengthened by adding a 44 ft section amidships, and the bare hull weight of this six-deck high insertion was approximately 500 tons. Three 5-in guns were removed and her upper decks extended aft to provide additional workshops. Storage tubes for Polaris missiles installed; bridge crane amidships loads and unloads missiles for alongside submarines.

Electronics: AS 11, 12, 18 and 19 fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver. AS 17 has one Mk 37FCS.

Modernisation: All except *Proteus* have undergone FRAM II modernisation to service nuclear-powered attack submarines. Additional maintenance shops provided to service nuclear plant components and advanced electronic equipment and weapons. After two 5-in guns and eight 40 mm guns (twin) removed.

Radar: One SPG 25 in AS 17.

2 "PIGEON" CLASS: SUBMARINE RESCUE SHIPS (ASR)

Name	No.	Builders	Commissioned	F/S
PIGEON	ASR 21	Alabama D.D. & S.B. Co, Mobile	28 Apr 1973	PA
ORTOLAN	ASR 22	Alabama D.D. & S.B. Co, Mobile	14 July 1973	AA

Displacement, tons: 3 411 full load
Dimensions, feet (metres): 251 × 86 (see *Design* note) × 21·25 *(76·5 × 26·2 × 6·5)*
Guns: 2—20 mm (Mk 68) (single)
Main engines: 4 diesels (Alco); 6 000 bhp; 2 shafts = 15 knots
Range, miles: 8 500 at 13 knots
Complement: 115 (6 officers, 109 enlisted men)
Staff accommodation: 14 (4 officers, 10 enlisted men)
Submersible operators: 24 (4 officers, 20 enlisted men)

These are the world's first ships designed specifically for this role, all other ASR designs being adaptations of tug types. The "Pigeon" class ships serve as (1) surface support ships for the Deep Submergence Rescue Vehicles (DSRV), (2) rescue ships employing the existing McCann rescue chamber, (3) major deep-sea diving support ships and (4) operational control ships for salvage operations. Each ASR is capable of transporting, servicing, lowering, and raising two Deep Submergence Rescue Vehicles (DSRV) (see section on Deep Submergence Vehicles). *Pigeon* authorised in the FY 1967 new construction programme and *Ortolan* in the FY 1968 programme. *Pigeon* was laid down on 17 July 1968 and launched on 13 August 1969; *Ortolan* was laid down on 22 August 1968 and launched on 10 September 1969.

Design: These ships have twin, catamaran hulls, the first ocean-going catamaran ships to be built for the US Navy with the exception of AGOR *Hayes* of the MSC, since Robert Fulton's steam gunboat *Demologos* of 1812. Each of the twin hulls is 251 ft long and 26 ft wide. The well between the hulls is 34 ft across, giving the ASR a maximum beam of 86 ft. Fitted with helicopter platform and with precision three-dimensional sonar system for tracking submersibles.

Diving: These ships have been fitted with the Mk II Deep Diving System to support conventional or saturation divers operating at depths to 850 ft. The system consists of two recompression chambers, two personnel transfer capsules to transport divers between the ship and ocean floor. Fitted for helium-oxygen diving.

Electronics: Fitted with OE-82 satellite communications antenna, SSR-1 receiver and WSC-3 transceiver.

Engineering: Space and weight are reserved for future installation of a ducted thruster in each bow to enable the ship to maintain precise position while stopped or at slow speeds.

ORTOLAN *7/1979, Dr. Giorgio Arra*

4 "CHANTICLEER" CLASS: SUBMARINE RESCUE SHIPS (ASR)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
FLORIKAN	ASR 9	Moore S.B. & D.D. Co, Oakland	5 Apr 1943	PA
KITTIWAKE	ASR 13	Savannah Machine & Foundry Co	18 July 1946	AA
PETREL	ASR 14	Savannah Machine & Foundry Co	24 Sep 1946	AA
SUNBIRD	ASR 15	Savannah Machine & Foundry Co	28 Jan 1947	AA

Displacement, tons: 1 653 standard; 2 320 full load
Dimensions, feet (metres): 251·5 × 44 × 16 *(76·7 × 13·4 × 4·9)*
Guns: 2—20 mm (single) (Mk 68)
Main engines: Diesel-electric (Alco ARS 9 and 15; General Motors remainder); 3 000 bhp; 1 shaft = 15 knots
Complement: 116-221

Equipped with powerful pumps, heavy air compressors, and rescue chambers for submarine salvage and rescue operations. Launched on 14 June 1942, 10 July 1945, 29 September 1945 and 3 April 1945 respectively.
Fitted for helium-oxygen diving.

Electronics: Fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Transfers: Former US Navy submarine rescue ships serve in the navies of Brazil and Turkey.

FLORIKAN *7/1979, Dr. Giorgio Arra*

1 "SOTOYOMO" CLASS: AUXILIARY OCEAN TUG (ATA)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
ACCOKEEK	ATA 181	Levingston S.B. Co, Orange, Texas	7 Oct 1944	MAR

Displacement, tons: 534 standard; 860 full load
Dimensions, feet (metres): 143 × 33·9 × 13 *(43·6 × 10·3 × 4)*
Main engines: Diesel-electric (General Motors diesels); 1 500 bhp; 1 shaft = 13 knots
Complement: 49 (7 officers, 42 enlisted men)

Steel-hulled tug formerly designated as rescue tug (ATR); designation changed to ATA in 1944. Launched on 27 July 1944.
Decommissioned in 1969-71 and placed in reserve under the Maritime Administration.

Transfers: Ships of this class serve with Argentina, Brazil, Chile, Colombia, Dominican Republic, Haiti, South Korea, Peru and Taiwan.

ACCOKEEK *1970, USN*

8 "CHEROKEE" and "ABNAKI" CLASSES: FLEET TUGS (ATF)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
SENECA	ATF 91	Cramp S.B. Co, Philadelphia	30 Apr 1943	MAR
MOCTOBI	ATF 105	Charleston S.B. & D.D. Co, SC	25 July 1944	NRF
QUAPAW	ATF 110	United Engineering Co, Alameda, Calif	6 May 1944	NRF
TAKELMA	ATF 113	United Engineering Co, Alameda, Calif	3 Aug 1944	NRF
ATAKAPA	T-ATF 149	Charleston S.B. & D.D. Co, SC	8 Dec 1944	TAA
MOSOPELEA	T-ATF 158	Charleston S.B. & D.D. Co, SC	28 July 1945	TAA
PAIUTE	ATF 159	Charleston S.B. & D.D. Co, SC	27 Aug 1945	NRF
PAPAGO	ATF 160	Charleston S.B. & D.D. Co, SC	3 Oct 1945	NRF

Displacement, tons: 1 235 standard; 1 640 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Main engines: Diesel-electric drive (General Motors or Busch-Sulzer); 3 000 bhp; 1 shaft = 16·5 knots
Complement: 75 (5 officers, 70 enlisted men) navy; 24 civilians plus 6 navy communications personnel in MSC ships.

Large ocean tugs fitted with powerful pumps and other salvage equipment. ATF 105 and later ships ("Abnaki" class) have smaller funnel. As built these ships mounted two 40 mm guns in addition to 3-in gun. Launched on 22 January 1943, 25 March 1944, 15 May 1943, 18 September 1943, 11 July 1944, 7 March 1945, 4 June 1945, 21 June 1945 respectively.
Two fleet tugs have been assigned to the MSC and provided with civilian crews; these ships are designated T-ATF. ATF 158 assigned to MSC in July 1973 and ATF 149 to MSC in August 1974. Five ships of this class serve with the US Coast Guard.

Electronics: *Moctobi* fitted with OE-82 satellite communications antenna and SSR-1 receiver.

Naval Reserve: Following transferred to Naval Reserve Force: *Moctobi*, 1 January 1977; *Paiute*, 1 February 1977; *Papago*, 1 August 1977; *Quapaw*, 30 September 1977; *Takelma*, 1 June 1979.

Transfers: Ships of this class serve with Argentina, Chile, Colombia, Dominican Republic, Ecuador, Indonesia, Mexico, Pakistan, Peru, Turkey, Taiwan and Venezuela. *Ute* ATF 76 and *Lipan* ATF 85 transferred to US Coast Guard on 30 September 1980.

Radar: RM 1650/6X or TM 1660/12S.

ATAKAPA *1978, L. and L. van Ginderen*

3 "EDENTON" CLASS: SALVAGE AND RESCUE SHIPS (ATS)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
EDENTON	ATS 1	Brooke Marine, Lowestoft, England	23 Jan 1971	AA
BEAUFORT	ATS 2	Brooke Marine, Lowestoft, England	22 Jan 1972	PA
BRUNSWICK	ATS 3	Brooke Marine, Lowestoft, England	19 Dec 1972	PA

Displacement, tons: 2 929 full load
Dimensions, feet (metres): 282·6 × 50 × 15·1 *(86·1 × 15·2 × 4·6)*
Guns: 2—20 mm (Mk 68 single) (ATS 2 and 3); 2—20 mm (twin Mk 24) (ATS 1)
Main engines: 4 diesels (Paxman); 6 000 bhp; 2 shafts; (cp propellers) = 16 knots
Complement: 100 (9 officers and 91 enlisted men)

These ships are capable of (1) ocean towing, (2) supporting diver operations to depths of 850 ft, (3) lifting submerged objects weighing as much as 600 000 lb from a depth of 120 ft by static tidal lift or 30 000 lb by dynamic lift, (4) fighting ship fires. Fitted with 10 ton capacity crane forward and 20 ton capacity crane aft.
ATS 1 was authorised in the FY 1966 shipbuilding programme; ATS 2 and ATS 3 in the FY 1967 programme. Laid down on 1 April 1967, 19 February 1968 and 5 June 1968 respectively; launched on 15 May 1968, 20 December 1968 and 14 October 1969.
Classification changed from salvage tug (ATS) to salvage and rescue ship (ATS) on 16 February 1971.

Diving: These ships can carry the air-transportable Mk 1 Deep Diving System which can support four divers working in two-man shifts at depths to 850 ft. The system consists of a double-chamber recompression chamber and a personnel transfer capsule to transport divers between the ship and ocean floor. The ships' organic diving capability is compressed air only.

Engineering: Fitted with tunnel bow thruster for precise manoeuvring.

BRUNSWICK *6/1980, Dr. Giorgio Arra*

1 CONVERTED "CURRITUCK" CLASS: GUIDED MISSILE SHIP (AVM)

Name	*No.*	*Builders*	*Commissioned*	*FIS*
NORTON SOUND	AVM 1 (ex-AV 11)	Los Angeles S.B. & D.D. Co, San Pedro	8 Jan 1945	PA

Displacement, tons: 9 106 standard; 15 170 full load
Dimensions, feet (metres): 540·6 × 71·6 × 23·5 *(164·8 × 21·8 × 7·2)*
Missiles: 1 twin Standard surface-to-air launcher (Mk 26)
Machinery: Geared turbines (Allis-Chalmers); 12 000 shp; 2 shafts = 19 knots
Boilers: 4 (Babcock & Wilcox)
Complement: 750 (86 officers, 664 enlisted men)

Norton Sound is a seagoing laboratory and test centre for advanced weapon systems. Constructed as a seaplane tender (AV 11); laid down 7 September 1942, launched 28 November 1943. After operating as a seaplane tender in the Pacific War and afterwards she was converted to a guided missile test ship in 1948. Subsequently served as test ship for a number of research and weapon programmes, and is currently employed as a test platform for the Aegis advanced fleet defence system.

Classification: Changed from AV 11 to AVM 1 on 8 August 1951.

Conversion: *Norton Sound* was initially fitted as a guided missile (test) ship in 1948 during a seven month conversion at the Philadelphia Naval Shipyard.
Converted from November 1962 to June 1964 at Maryland S.B. & D.D. Co, Baltimore, Maryland, to test ship for the Typhon advanced weapons control system (intended for a new class of nuclear-powered guided missile cruisers); Typhon system removed in July 1966.
Modified in 1974 to serve as test ship for the Aegis advanced fleet defence system. SPY-1 paired radar arrays to provide 180 degree coverage (12 × 12 ft, six-sided "faces") installed atop forward superstructure; Mk 110 radar control system installed (including five UYK-7 computers to control phase steering of radars). Twin Standard surface-to-air missile launcher fitted on stern. SPS 52 radar also fitted.

Gunnery: Fitted in 1968 with light-weight 5-in 54 calibre gun and associated Mk 86 gunfire control system for operational test and evaluation.

Missiles: Missiles and rockets test fired from *Norton Sound* include the Aerobee, Loon (US version of the German V-1), Lark, Regulus, Terrier, Tartar, and Sea Sparrow.

NORTON SOUND *7/1979, Dr. Giorgio Arra*

NAVAL RESERVE FORCE MOBILE LOGISTIC SHIPS

Name/No.	*NRF Homeport*	*Date of Assignment*
MAUNA KEA (AE 22)	Vallejo, Calif	1 Oct 1979
PYRO (AE 24)	Vallejo, Calif	1 Sep 1980
PRESERVER (ARS 8)	Little Creek, Va	1 Nov 1979
MOCTOBI (ATF 105)	Everett, Wash	1 Jan 1977
QUAPAW (ATF 110)	Port Hueneme, Calif	30 Sep 1977
TAKELMA (ATF 113)	San Diego, Calif	1 June 1979
PAIUTE (ATF 159)	Mayport, Fla	1 Feb 1977
PAPAGO (ATF 160)	Little Creek, Va	1 Aug 1977

SERVICE CRAFT

As of 1 March 1981, the US Navy has 1 109 service craft, primarily small craft, on the US Naval Vessel Register. A majority of them provide services to the fleet in various harbours and ports. Others are ocean going ships such as *Elk River* that provide services to the fleet in the research area. Only the self-propelled craft and relics are listed here. The non-self-propelled craft, such as floating cranes, dredges are not included. Most of the service craft are rated as "active, in service", but a few are rated as "in commission".

FLOATING DRY DOCKS

The US Navy operates a number of floating dry docks to supplement dry dock facilities at major naval activities, to support fleet ballistic missile submarines (SSBN) at advanced bases, and to provide repair capabilities in forward combat areas.
The larger floating dry docks are made sectional to facilitate movement overseas and to render them self docking. The ARD-type docks have the forward end of their docking well closed by a structure resembling the bow of a ship to facilitate towing. Berthing facilities, repair shops, and machinery are housed in sides of larger docks. None is self-propelled.
Seventeen floating dry docks are in Navy service (including two partial docks), eight are out of service in reserve (including two partial docks), and 28 are on lease to commercial firms for private use. Several are on loan to other US services and foreign navies (including one partial dock).
ARDM 4 was built at the Bethlehem Steel Co, Sparrows Point, Maryland. Designed specifically to service "Los Angeles" class (SSN 688) submarines. Completed January 1979.
Figures in parenthesis indicate the number of sections for sectional docks. Each section of the AFDB docks has a lifting capacity of about 10 000 tons. Four sections of the AFDB 7 form the floating dry dock *Los Alamos* at Holy Loch, Scotland and two sections are in reserve. (The AFDB sections each are 256 ft long, 80 ft in width, with wing walls 83 ft high; the wing walls, which contain compartments, fold down when the sections are towed).
White Sands (ARD 20) was reclassified as auxiliary deep submergence support vehicle (AGDS 1) on 1 August 1973; subsequently stricken. ARD 5 named *Waterford* 16 November 1976, ARD 7 *West Milton* on 18 May 1976, ARD 30 *San Onofre* on 7 March 1975, AFDM 7 *Sustain* on 9 May 1979 and AFDB 1, AFDL 1, 6, 23, 47, 48, AFDM 5 and 6 and ARDM 4 as listed below on 7 June 1979.

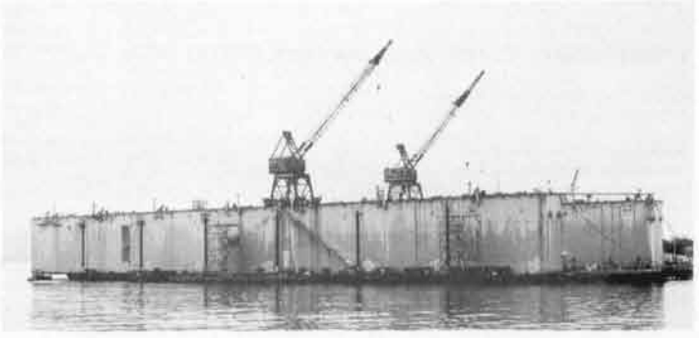
Transfers: Some of the docks have recently been bought outright from US Navy (previously on loan) and have been deleted from US Naval Vessel Register.

LARGE AUXILIARY FLOATING DRY DOCKS (AFDB)

Name-No.	*Completed*	*Capacity (tons)*	*Construction*	*Status*
ARTISAN (AFDB 1)	1943	90 000	Steel (5)	Active, Subic Bay (B-F only)
AFDB 2	1944	90 000	Steel (9)	Active, Subic Bay (C, D, H and I) / Navy Reserve, Pearl Harbour (B, E-G and J)
AFDB 3	1944	81 000	Steel (9)	Maritime Reserve, James River (A-I)
AFDB 4	1944	55 000	Steel (7)	Navy Reserve Bremerton (A-G)
AFDB 5	1944	55 000	Steel (7)	Navy Reserve, Pearl Harbour (A-G)
LOS ALAMOS (AFDB 7)	1945	55 000	Steel (6)	Navy Reserve, Philadelphia (A, B) / Active, Holy Loch, Scotland (C-E and G)

MEDIUM AUXILIARY FLOATING DRY DOCKS (AFDM)

Name-No.	*Completed*	*Capacity (tons)*	*Construction*	*Status*
AFDM 1 (ex-YFD 3)	1942	15 000	Steel (3)	Commercial lease, Todd SY, Galveston
AFDM 2 (ex-YFD 4)	1942	15 000	Steel (3)	Commercial lease, Todd SY, New Orleans
AFDM 3 (ex-YFD 6)	1943	15 000	Steel (3)	Commercial lease, Todd SY, New Orleans
RESOURCEFUL (AFDM 5) (ex-YFD 21)	1943	15 000	Steel (3)	Active, Subic Bay, Philippines
COMPETENT (AFDM 6) (ex-YFD 62)	1944	15 000	Steel (3)	Active, Pearl Harbour
SUSTAIN (AFDM 7) (ex-YFD 63)	1945	15 000	Steel (3)	Active, Norfolk, Va
RICHLAND (AFDM 8) (ex-YFD 64)	1944	15 000	Steel (3)	Active, Guam, Marianas
AFDM 9 (ex-YFD 65)	1945	15 000	Steel (3)	Commercial lease, Jacksonville SY
AFDM 10	1945	15 000	Steel (3)	Commercial lease, Jacksonville SY



COMPETENT (AFDM 6) *8/1978, Dr. Giorgio Arra*

SMALL AUXILIARY FLOATING DRY DOCKS (AFDL)

Name-No.	*Completed*	*Capacity (tons)*	*Construction*	*Status*
ENDEAVOR (AFDL 1)	1943	1 000	Steel	Guantanamo Bay, Cuba
AFDL 2	1943	1 000	Steel	Commercial lease—Marine Const & D Co, Seattle
DYNAMIC (AFDL 6)	1944	1 000	Steel	Little Creek, Virginia
AFDL 8	1943	1 000	Steel	Commercial lease—Tracor/Mas, Port Everglades
AFDL 9	1943	1 000	Steel	Commercial lease—Calif SB & DD Co, Terminal Isle
AFDL 12	1943	1 000	Steel	Commercial lease—SEA-TAC, (Alaska), Seattle
AFDL 15	1943	1 000	Steel	Commercial lease—Hendry Corp, Tampa
AFDL 16	1943	1 000	Steel	Commercial lease—General Ship Repair Co, Baltimore
AFDL 19	1944	1 000	Steel	Commercial lease—Al. Larson Boat Shop, Terminal Isle
AFDL 21	1944	1 000	Steel	Commercial lease—Dillingham SY Inc, Honolulu
AFDL 22	1944	1 900	Steel	Commercial lease
ADEPT (AFDL 23)	1944	1 900	Steel	Subic Bay, Philippines
AFDL 25	1944	1 000	Steel	Commercial lease—Puerto Rico DD & R Co, San Juan
AFDL 29	1943	1 000	Steel	Commercial lease—Jacksonville SY Inc
AFDL 37	1944	2 800	Concrete	Commercial lease—Nat. Steel and SB Corp, San Diego
AFDL 38	1944	2 800	Concrete	Commercial lease—Merritt Ship Repair, San Francisco
AFDL 40	1944	2 800	Concrete	Commercial lease—Dillingham SY Inc, Honolulu
AFDL 41	1944	2 800	Concrete	Commercial lease—Jacksonville SY Inc
AFDL 45	1944	2 800	Concrete	Commercial lease—Lockheed SB and Construction, Seattle
RELIANCE (AFDL 47)	1946	6 500	Steel	New London, Connecticut (from 1 July 1981)
DILIGENCE (AFDL 48)	1956	4 000	Concrete	To be commercially leased (out of service Long Beach, Calif from 23 May 1980)

Transfers: AFDL 4, Brazil; 5 Taiwan; 11, Kampuchea; 20, Philippines; 24, Philippines; 26, Paraguay; 28, Mexico; 33, Peru; 34 and 36, Taiwan; 39, Brazil; 44, Philippines; 1 to Turkey and 1 to Viet-Nam.

AUXILIARY REPAIR DRY DOCKS and MEDIUM AUXILIARY REPAIR DRY DOCKS (ARD and ARDM)

Name-No.	Com-pleted	Capacity (tons)	Construc-tion	Status
WATERFORD (ARD 5)	1942	3 500	Steel	New London, Connecticut
WEST MILTON (ARD 7)	1943	3 500	Steel	Maritime Reserve, James River (from 30 June 1981)
SAN ONOFRE (ARD 30)	1944	3 500	Steel	San Diego, Calif
OAK RIDGE (ARDM 1) (ex-ARD 19)	1944	8 000	Steel	Kings Bay, Georgia
ALAMAGORDO (ARDM 2) (ex-ARD 26)	1944	8 000	Steel	Charleston, South Carolina
ENDURANCE (ARDM 3) (ex-ARD 18)	1944	8 000	Steel	Charleston, South Carolina
SHIPPINGPORT (ARDM 4)	1979	10 000	Steel	New London, Connecticut

Transfers: ARD 2 to Mexico; 6, Pakistan; 8, Peru; 9, Taiwan; 11, Mexico; 12, Turkey; 13, Venezuela; 14, Brazil; 15, Mexico; 17, Ecuador; 22 *(Windsor)*, Taiwan; 23, Argentina; 24, South Korea; 25, Chile; 28, Colombia; 29 *(Arco)*, Iran; 32, Chile.

SAN ONOFRE (ARD 30) *6/1970, USN*

YARD FLOATING DRY DOCKS (YFD)

Name-No.	Com-pleted	Capacity (tons)	Construc-tion	Status
YFD 8	1942	20 000	Wood	Commercial lease—Todd SY, NY City
YFD 23	1943	10 500	Wood	Commercial lease—Lockheed SB & Const Co, Seattle
YFD 54	1943	5 000	Wood	Commercial lease—Todd Pacific SY, Seattle
YFD 68	1945	14 000	Steel (3)	Commercial lease—Todd Pacific SY, San Pedro
YFD 69	1945	14 000	Steel (3)	Commercial lease—Port of Portland, Oregon
YFD 70	1945	14 000	Steel (3)	Commercial lease—Todd Pacific SY, Seattle
YFD 71	1945	14 000	Steel (3)	Out of service, Long Beach, Calif
YFD 83 (ex-AFDL 31)	1943	1 000	Steel	US Coast Guard loan since Jan 1947

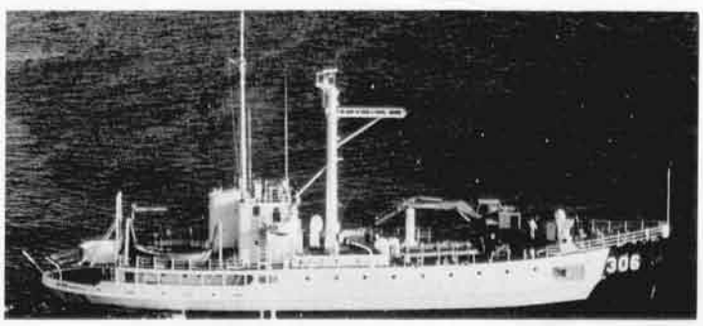
UNCLASSIFIED MISCELLANEOUS (IX)

1 CONVERTED ARMY SUPPLY SHIP TYPE

Name	F/S
IX 306 (ex-FS 221)	ASA

Displacement, tons: 906 full load
Dimensions, feet (metres): 179 × 33 × 10 *(54·6 × 10·1 × 3·1)*
Main engine: Diesel; 1 shaft = 12 knots

Former Army cargo ship (freight and supply) acquired by the Navy in January 1969 and subsequently converted to a weapon test ship, being placed in service late in 1969. Conducts research for the Naval Underwater Weapons Research and Engineering Station, Newport, Rhode Island; operates in Atlantic Underwater Test and Evaluation Centre (AUTEC) range in Caribbean. Manned by Navy and civilian RCA personnel.



IX 306 *1969, USN*

1 CONVERTED "MARK" CLASS

Name	No.	F/S
NEW BEDFORD	IX 308 (ex-AKL 17, ex-FS 289)	PSA

Displacement, tons: 935
Dimensions, feet (metres): 176·5 × 32·8 × 10 *(53·8 × 10 × 3·1)*
Main engine: Diesel; 1 000 bhp; 1 shaft = 10 knots

Former Army cargo ship (freight and supply) acquired by the Navy on 1 March 1950 for cargo work and subsequently converted to support torpedo testing. Operated since 1963 by Naval Torpedo Station, Keyport, Washington. Employed as Torpedo Test ship.

NEW BEDFORD *1973, USN*

1 BARGE GROUP

IX 310

A group of barges used by Naval Underwater Sound Laboratory, Newport, Rhode Island. Placed in service 1 April 1971. Consists of two barges joined by a deckhouse. Based on Lake Seneca, NY.

1 CONVERTED "ELK RIVER" CLASS

Name	No.	Builders	Commissioned	F/S
ELK RIVER	IX 501 (ex-LSMR 501)	Brown S.B. Co, Houston	27 May 1945	PSA

Displacement, tons: 1 785 full load
Dimensions, feet (metres): 229·7 × 50 × 9·2 *(70 × 15·2 × 2·8)*
Main engines: Diesels; 1 400 bhp; 2 shafts = 11 knots
Complement: 25 + 20 technical personnel

Elk River is a former rocket landing ship converted to support Navy deep submergence activities on the San Clemente Island Range off the coast of southern California. Launched 21 April 1945. The ship is capable of supporting (1) deep diving for man-in-the-sea programmes, (2) deep diving for salvage programmes, (3) submersible test and evaluation, (4) underwater equipment testing, and (5) deep mooring operations. Operated by combined Navy-civilian crew.

Conversion: She was withdrawn from the Reserve Fleet and converted to a range support ship in 1967-68 at Avondale Shipyards Inc, Westwego, Louisiana, and the San Francisco Bay Naval Shipyard.
The basic LSMR hull was lengthened and eight-foot sponsons were added to either side to increase deck working space and stability; superstructure added forward. An open centre well was provided to facilitate lowering and raising equipment; also fitted with 65 ton capacity gantry crane (on tracks) to handle submersibles and active positioning mooring system to hold ship in precise location without elaborate mooring and permit shifting within the moor. Five anchors including bow anchor. Fitted with prototype Mk 2 Deep Diving System.

ELK RIVER *1978, Dr. Giorgio Arra*

3 "BENEWAH" CLASS

Name	*No.*	*Builders*	*Commissioned*	*F/S*
MERCER	IX 502 (ex-APB 39, ex-APL 39)	Boston Navy Yard	19 Sep 1945	PSA
NUECES	IX 503 (ex-APB 40, ex-APL 40)	Boston Navy Yard	30 Nov 1945	PSA
ECHOLS	IX 504 (ex-APB 37, ex-APL 37)	Boston Navy Yard	1 Jan 1947	ASA

Displacement, tons: 4 080 full load
Dimensions, feet (metres): 328 × 50 × 11 *(100 × 15·2 × 3·4)*
Guns: Vary
Main engines: Diesels (General Motors); 1 600 to 1 800 bhp; 2 shafts = 10 knots
Complement: 193 (13 officers, 180 enlisted men) as APB
Troops: 1 226 (26 officers, 1 200 enlisted men) as APB

Originally built as self-propelled barracks ships (APB) built to provide support and accommodation for small craft and riverine forces. Launched on 30 July 1945, 17 November 1944, 6 May 1945, respectively. *Echols* placed in reserve January 1947. All ex-LST type ships of the same basic characteristics. *Mercer* and *Nueces* recommissioned in 1968 for service in Viet-Nam; decommissioned in 1969-71 as US riverine forces in South Viet-Nam were reduced.
Each APB has troop berthing and messing facilities, evaporators which produce up to 40 000 gallons of fresh water per day, a 16 bed hospital, X-ray room, dental room, bacteriological laboratory, pharmacy, laundry, library, and tailor shop; living and most working spaces are air-conditioned.
Mercer and *Nueces* again reactivated in 1974 to serve as barrack ships for ships in overhaul at Bremerton, Washington. *Echols* reactivated in 1976 to provide berthing for crews of Trident missile submarines being built by General Dynamics Electric Boat Division in Groton, Connecticut.

Classification: *Mercer* and *Nueces* designated "unclassified miscellaneous" (IX) on 1 November 1975; *Echols* changed to IX on 1 February 1976.

MERCER (as APB 39) *1968, USN*

1 "YFU 71" CLASS

IX 506 (ex-YFU 82)

See under "YFU 71" class Harbour Utility Craft for data and information.

1 "ADMIRAL W. S. BENSON" CLASS

GENERAL HUGH J. GAFFEY IX 507

See under "Admiral W. S. Benson" class Transports (AP) for data and information.

Name	*F/S*
IX 508 (ex-LCU 1618)	PSA

For general characteristics, see under "LCU 1610" class in the Amphibious Warfare section. Converted as replacement for IX 505 (ex-YTM 759). Reclassified as IX on 1 December 1979. Assigned to the Naval Ocean Systems Center, San Diego, California. Conversion and overhaul lasted from September to November 1977 and included installation of a bow thruster, a bridge and pilot house, and a hangar type enclosed storage area in the well deck, for the support of the Center's recovery vehicles CURV I and CURV II and installation of a crane.

Name	*F/S*
IX 509 (ex-Underwater Explosive Charge No. 1)	ASA

Displacement, full load: 3 000 tons
Dimensions, feet (metres): 184 × 12 × — *(56·1 × 3·7 × —)*
Complement: Not available

Built in 1942 at the Norfolk Naval Shipyard. Classified as "floating equipment" until 1 December 1979 when classified and instated on the Naval Vessel Register as IX 509. Has a 60 ton capacity crane. Based at David W. Taylor Naval Ship Research and Development Center.

1 SAIL FRIGATE

Name	*No.*	*Under Way*	*F/S*
CONSTITUTION	None	23 July 1798	AA

The oldest ship remaining on the Navy List. *Constitution* is one of the six frigates authorised by act of Congress on 27 March 1794. Has been in full commission since October 1971, having been "in commission, special" prior to that date. Served as Flagship of the First Naval District until 1 October 1977 when she was transferred to the control of the Director of Naval History, Department of the Navy. Every year she is taken out into Boston Harbor and "turned around" so she will wear evenly on both sides of her masts. Overhauled at the former Boston Naval Shipyard from April 1973 to early 1975 at the cost of $4·2 million to "spruce her up" for the American Bicentennial.
The sailing ship *Constellation*, which survives under private ownership at Baltimore, Maryland, is apparently the last sailing man-of-war built for the US Navy; she was constructed at the Norfolk (Virginia) Navy Yard in 1853-54, built in part with material from the earlier frigate *Constellation* (launched 1797).

1 CONVERTED "YW 83" CLASS: MISCELLANEOUS AUXILIARY (YAG)

Name	*No.*	*F/S*
MONOB I	YAG 61 (ex-IX 309, ex-YW 87)	ASA

Displacement, tons: 440 light; 1 390 full load
Dimensions, feet (metres): 174 × 33 *(53 × 10·1)*
Main engine: 1 diesel = 7 knots

Monob I is a mobile listening barge converted from a self-propelled water barge. Built in 1943 and completed conversion for acoustic research in May 1969, being placed in service in May 1969. Conducts research for the Naval Mine Defence Laboratory, Panama City, Florida.
Designation changed from IX 309 to YAG 61 on 1 July 1970.
YAG 60 (ex-*Butternut* ANL 9) still exists at Pearl Harbor as a fire-fighting training hulk.

MONOB I *1969, USN*

2 DIVING TENDERS (YDT)

Tenders used to support shallow-water diving operations. Two self-propelled diving tenders are on the Navy List: *Phoebus* YDT 14 (ex-YF 294), and *Suitland* YDT 15 (ex-YF 336). (Two non-self-propelled YDTs are in service).

3 COVERED LIGHTERS (YF)

Lighters used to transport material in harbours; self-propelled; three are on the Navy List: *YF 862*, *YF 866* and *Keyport* (YF 885). Only *Keyport* is in service.

6 FERRYBOATS (YFB)

Ferryboats used to transport personnel and vehicles in large harbours; self-propelled; *YFB 83* and *87-91*; all are active. In service, *YFB 88-91* are the former LCU 1636, 1638-1640, all reclassified on 1 September 1969. *Aquidneck* (YFB 14) transferred to State of Washington on 23 December 1975.

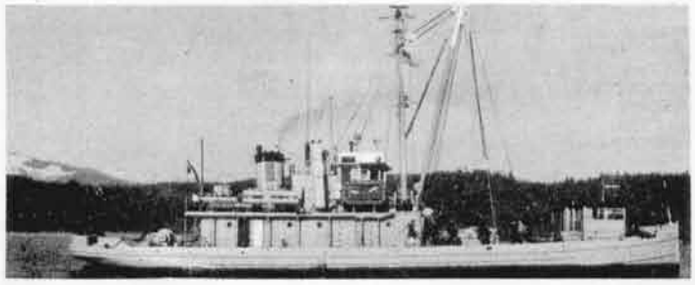
YFB 88 (ex-LCU 1636) *USN*

2 REFRIGERATED COVERED LIGHTERS (YFR)

Used to store and transport food and other materials which require refrigeration. *YFR 888* and *YFR 890* remain on the Navy List, *YFR 888* in reserve, *YFR 890* on loan to another government agency.

5 COVERED LIGHTERS (RANGE TENDER (YFRT))

Lighters used for miscellaneous purposes; *YFRT 287, 451, 520* and *523* active; *YFRT 418* is in reserve. Note Mk 32 torpedo tubes on *YFRT 520* alongside funnel.



YFRT 520 *1969, USN*

10 HARBOUR UTILITY CRAFT (YFU): 1 UNCLASSIFIED MISCELLANEOUS (IX)

YFU 71	**YFU 74**	**YFU 76**	**YFU 79**	**YFU 81**
YFU 72	**YFU 75**	**YFU 77**	**YFU 80**	**IX 506** (ex-*YFU 82*)
				YFU 83

Dimensions, feet (metres): 125 × 36 × 7·5 *(38·1 × 10·9 × 2·3)*
Main engines: Diesels = 8 knots
Guns: 2—5 MGs

Militarised versions of a commercial lighter design and a single craft *(YFU 83)* built to LCU 1466 design and of similar characteristics. Used for off-loading large ships in harbours and ferrying cargo from one coastal port to another. Built by Pacific Coast Engineering Co, Alameda, California; completed 1967-1968. Can carry more than 300 tons cargo; considerable cruising range.
YFU 71-77 and *YFU 80-82* loaned to US Army in 1970 for use in South Viet-Nam; returned to Navy control in 1973. Only *YFU 83* active—rest in reserve. *YFU 82* reclassified *IX 506* on 1 April 1978. Assigned in active status to Naval Oceanographic Systems Center.

YFU 75 *1968, USN*

8 HARBOUR UTILITY CRAFT LCU TYPE (YFU)

YFU 50 (ex-LCU 1486)	**YFU 97** (ex-LCU 1611)	**YFU 101** (ex-LCU 1612)
YFU 91 (ex-LCU 1608)	**YFU 98** (ex-LCU 1615)	**YFU 102** (ex-LCU 1462)
YFU 94 (ex-LCU 1488)	**YFU 100** (ex-LCU 1610)	

Former utility landing craft employed primarily as harbour and coastal cargo craft (see section on Landing Craft for basic characteristics).
Several YFUs were loaned to the US Army in 1970 for use in Viet-Nam after withdrawal of US Navy riverine and coastal forces. *YFU 50* and *94* in reserve, remainder active.

17 FUEL OIL BARGES (YO)

Small liquid fuel carriers intended to fuel ships where no pierside fuelling facilities are available, self-propelled; 10 active, remainder in reserve.

7 GASOLINE BARGES (YOG)

Similar to the fuel barges (YO), but carry gasoline and aviation fuels; self-propelled; three are active with four in reserve.

22 PATROL CRAFT (YP)

YP 654	**YP 657**	**YP 661**	**YP 665**	**YP 669**	**YP 673**
YP 655	**YP 658**	**YP 662**	**YP 666**	**YP 670**	**YP 674**
YP 656	**YP 659**	**YP 663**	**YP 667**	**YP 671**	**YP 675**
	YP 660	**YP 664**	**YP 668**	**YP 672**	

YP 654 series:

Displacement, tons: 69·5 full load
Dimensions, feet (metres): 80·4 × 18·8 × 5·3 *(24·5 × 5·7 × 1·6)*
Main engines: 4 diesels (General Motors); 660 bhp; 2 shafts

YP 673 series:

Displacement, tons: 68 full load
Dimensions, feet (metres): 80·6 × 17·8 × 5·3 *(24·6 × 5·4 × 1·6)*
Main engines: 2 Detroit diesels; 680 bhp; 2 shafts

These craft are used for instruction in seamanship and navigation at the Naval Academy, Annapolis, Maryland; Naval Officer Candidate School, Newport, Rhode Island; and Surface Warfare Officers School at Newport. Fitted with surface search radar, Fathometer, gyro compass, and UHF and MF radio; *YP 655* additionally fitted for instruction in oceanographic research at the Naval Academy.
YP 654-663 built by Stephens Bros, Inc, Stockton, California; completed in 1958; *YP 664* and *665* built by Elizabeth City Shipbuilders, Inc, Elizabeth City, North Carolina; *YP 666* and *667* built by Stephens Bros; *YP 668* built by Peterson Boatbuilding Co, Tacoma, Washington, completed in 1968; *YP 669-672* built by Peterson completed in 1971-1972. *YP 673-675* authorised in FY 1977. Builders, Peterson Builders Inc, Sturgeon Bay, Wisconsin—laid down April-December 1978 and completed June-September 1979.
These craft are of wooden construction with aluminium deck houses.
A contract for six YRBMLs (31-36) awarded to Marinette Marine Corp, Wisconsin on 12 March 1979. Contract for a further three (37-39) awarded to same company 22 September 1980.

YP 669 *1971, Peterson Builders*

81 LARGE HARBOUR TUGS (YTB)

EDENSHAW	YTB 752	**TAMAQUA**	YTB 797
MARIN	YTB 753	**OPELIKA**	YTB 789
PONTIAC	YTB 756	**NATCHITOCHES**	YTB 799
OSHKOSH	YTB 757	**EUFAULA**	YTB 800
PADUCAH	YTB 758	**PALATKA**	YTB 801
BOGALUSA	YTB 759	**CHERAW**	YTB 802
NATICK	YTB 760	**NANTICOKE**	YTB 803
OTTUMWA	YTB 761	**AHOSKIE**	YTB 804
TUSCUMBIA	YTB 762	**OCALA**	YTB 805
MUSKEGON	YTB 763	**TUSKEGEE**	YTB 806
MISHAWAKA	YTB 764	**MASSAPEQUA**	YTB 807
OKMULGEE	YTB 765	**WENATCHEE**	YTB 808
WAPAKONETA	YTB 766	**AGAWAN**	YTB 809
APALACHICOLA	YTB 767	**ANOKA**	YTB 810
ARCATA	YTB 768	**HOUMA**	YTB 811
CHESANING	YTB 769	**ACCONAC**	YTB 812
DAHLONEGA	YTB 770	**POUGHKEEPSIE**	YTB 813
KEOKUK	YTB 771	**WAXAHATCHIE**	YTB 814
NASHUA	YTB 774	**NEODESHA**	YTB 815
WAUWATOSA	YTB 775	**CAMPTI**	YTB 816
WEEHAWKEN	YTB 776	**HAYANNIS**	YTB 817
NOGALES	YTB 777	**MECOSTA**	YTB 818
APOPKA	YTB 778	**IUKA**	YTB 819
MANHATTAN	YTB 779	**WANAMASSA**	YTB 820
SAUGUS	YTB 780	**TONTOGANY**	YTB 821
NIANTIC	YTB 781	**PAWHUSKA**	YTB 822
MANISTEE	YTB 782	**CANONCHET**	YTB 823
REDWING	YTB 783	**SANTAQUIN**	YTB 824
KALISPELL	YTB 784	**WATHENA**	YTB 825
WINNEMUCCA	YTB 785	**WASHTUCNA**	YTB 826
TONKAWA	YTB 786	**CHETEK**	YTB 827
KITTANNING	YTB 787	**CATAHECASSA**	YTB 828
WAPATO	YTB 788	**METACOM**	YTB 829
TOMAHAWK	YTB 789	**PUSHMATHA**	YTB 830
MENOMINEE	YTB 790	**DEKANAWIDA**	YTB 831
MARINETTE	YTB 791	**PETALESHARO**	YTB 832
ANTIGO	YTB 792	**SHABONEE**	YTB 833
PIQUA	YTB 793	**NEWGAGON**	YTB 834
MANDAN	YTB 794	**SKENANDOA**	YTB 835
KETCHIKAN	YTB 795	**POKAGON**	YTB 836
SACO	YTB 796		

Displacement, tons: 350 full load
Dimensions, feet (metres): 109 × 30 × 13·8 *(33·2 × 9·1 × 4·2)*
Main engines: 2 diesels; 2 000 bhp; 2 shafts
Complement: 10 to 12 (enlisted)

Large harbour tugs; 81 are in active service. YTB 752 completed in 1959, YTB 753 in 1960, YTB 756-762 in 1961, YTB 763-766 in 1963, YTB 770 and YTB 771 in 1964, YTB 767-769, 776 in 1965, YTB 774, 775, 777-789 in 1966, YTB 790-793 in 1967, YTB 794 and 795 in 1968, YTB 796-803 in 1969, and YTB 804-815 completed in 1970-72, YTB 816-827 completed 1972-73, YTB 828-836 completed 1974-75. YTB 837 and YTB 838 transferred upon completion in late 1975 to Saudi Arabia.

KALISPELL *8/1978, Dr. Giorgio Arra*

56 MEDIUM HARBOUR TUGS (YTM)

TOKA (YTM 149)	**YANEGUA** (YTM 397)	**CHEGODEGA** (YTM 542)
KONOKA (YTM 151)	**NATAHKI** (YTM 398)	**YATANOCAS** (YTM 544)
DEKAURY (YTM 178)	**NUMA** (YTM 399)	**ACCOHANOC** (YTM 545)
MADOKAWANDO (YTM 180)	**OTOKOMI** (YTM 400)	**TAKOS** (YTM 546)
NEPANET (YTM 189)	**COSHECTON** (YTM 404)	**YANABA** (YTM 547)
SASSACUS (YTM 193)	**CUSSETA** (YTM 405)	**MATUNAK** (YTM 548)
DEKANISORA (YTM 252)	**KITTATON** (YTM 406)	**MIGADAN** (YTM 549)
HIAWATHA (YTM 265)	**POROBAGO** (YTM 413)	**ACOMA** (YTM 701)
RED CLOUD (YTM 268)	**SECOTA** (YTM 415)	**ARAWAK** (YTM 702)
PAWTUCKET (YTM 359)	**TACONNET** (YTM 417)	**MORATOC** (YTM 704)
SASSABA (YTM 364)	— (YTM 496)	**YUMA** (YTM 748)
WAUBANSEE (YTM 366)	**NABIGWON** (YTM 521)	**HACKENSACK** (YTM 750)
CHEPANOC (YTM 381)	**SAGAWAMICK** (YTM 522)	**MASCOUTAH** (YTM 760)
COATOPA (YTM 382)	**SENASQUA** (YTM 523)	**MENASHA** (YTM 761)
COCHALI (YTM 383)	**TUTAHACO** (YTM 524)	**APOHOLA** (YTM 768)
WANNALANCET (YTM 385)	**WAHAKA** (YTM 526)	**MIMAC** (YTM 770)
ITARA (YTM 391)	**WAHPETON** (YTM 527)	**HIAMONEE** (YTM 776)
WINAMAC (YTM 394)	**NADLI** (YTM 534)	**POCASSET** (YTM 779)
WINGINA (YTM 395)	**NAHOKE** (YTM 536)	

Former YTBs renumbered YTMs in the mid-1960s. Some are former Army tugboats. About half are in reserve (US Navy and Maritime) and half active.

7 SMALL HARBOUR TUGS (YTL)

Unnamed. Three are active and four in reserve.

10 WATER BARGES (YW)

Barges modified to carry water to ships in harbour; self-propelled. Four active, six in reserve.

SPECIAL VESSELS

ADVANCED NAVAL VEHICLES

(Not included in US Naval Vessel Register)

The US Navy has applied the term Advanced Naval Vehicles (ANV) to a number of platforms being considered for future construction programmes. These include airships, Small Waterplane Area Twin Hull (SWATH) ships, hydrofoils, Surface Effect Ships (SES), Air Cushion Vehicles (ACV), and Wing-In-Ground (WIG) effect machines, among others.

Some of these concepts are relatively old, such as the airship (which the US Navy discarded in 1962) and hydrofoils; the latter now being in production for the US Navy after several years of experimentation. After successful tests of two 100 ton SES designs the US Navy had planned to construct prototypes of a 2 000 ton ocean-going SES combatant.

Navy plans for the 3 000 ton SES have been consistently slowed down since 1975 by a Department of Defense decision that the Navy should undertake a comprehensive analysis of all advanced platform concepts, determine their potential roles, and relate estimated costs. Accordingly, in 1975 the Navy established the Advanced Naval Vehicles Concept Evaluation effort.

The Navy's overall SES programme continues to be the largest ANV effort in terms of current funding. Still, this is a paltry sum when compared with research and development efforts in a number of other areas.

3 000 ton SURFACE EFFECT SHIP (SES)

Money to build a prototype of this craft was requested in the FY 1979 budget; cost of the prototype to be between $800 and $900 million. However, in December 1977, the Carter Administration deleted the entire project from the budget. Despite this Congress approved and authorised $80 million for further research and development. In the FY 1980 budget, no money was requested for the project and Congress did not approve any further funds. In the FY 1981 budget, again no further funds were requested, thus effectively terminating the project.

1 EXPERIMENTAL SURFACE EFFECT SHIP (SES) AEROJET-GENERAL DESIGN

SES-100A

Weight, tons: 100 gross
Dimensions, feet (metres): 81·9 × 41·9 *(25 × 12·8)*
Main/lift engines: 4 gas turbines (Avco-Lycoming) 12 000 hp; three fans for lift and two water-jet propulsion systems = 80+ knots (designed)

Surface effect ship developed by Aerojet-General Corporation, and built by Tacoma Boatbuilding Co, Tacoma, Washington, to test feasibility of large SES for naval missions. Christened in July 1971; underway in mid-1972 in competition with the Bell design described below. Aluminium construction with rigid sidewalls to hold cushion or bubble of air. Cargo capacity ten tons (instrumentation during evaluation); provision for crew of four and six observers. Fitted with four TF-35 gas turbine engines, marine version of the T55-L-11A developed for the CH-47C helicopter. The SES-100A is reported to have reached 76 knots on trials. Overhauled at NAS Patuxant River in 1979. Under operational control of Naval Sea Systems Command.

SES-100A *11/1978, USN*

1 EXPERIMENTAL SURFACE EFFECT SHIP (SES) BELL AEROSYSTEMS DESIGN

SES-100B

Weight, tons: 100 gross
Dimensions, feet (metres): 78 × 35 *(23·8 × 10·7)*
Main engines: 3 gas turbines (Pratt & Whitney); 13 500 hp; 2 semi submerged, super cavitating propellers = 80+ knots
Lift engines: 3 gas turbines (United Aircraft of Canada); 1 500 hp; eight lift fans

Surface effect ship developed by Bell Aerospace Division of the Textron Corp; built at Bell facility in Michoud, Louisiana. Christened on 6 March 1971; underway in February 1972 as competitive development platform for Navy.

Aluminium hull with rigid sidewalls to hold cushion or bubble of air. Cargo capacity ten tons (instrumentation during evaluation); provision for crew of four and six observers.

Fitted with three Pratt & Whitney FT-12 gas turbine engines and three United Aircraft of Canada ST-6J-70 gas turbine engines.

The SES-100B set an SES speed record of 89·48 knots during trials on 30 June 1976. During the same year she successfully made a vertical launch of a Standard missile while moving at 60 knots. Overhauled at NAS Patuxant River in 1979. Under operational control of Naval Sea Systems Command.

SES-100B *1974, Bell Aerosystems*

1 EXPERIMENTAL SURFACE EFFECT SHIP (SES) BELL-HALTER DESIGN

SES-110BH

Displacement, tons: 138 full load (prior to lengthening)
Dimensions, feet (metres): 160 × 39 × 4·5 (on cushion); 22·5 (off cushion) *(48·8 × 11·9 × 1·4, 6·9)*
Main engines: Propulsion: two type 16V149TI Detroit diesels; shp not available; 2 shafts = 19 knots
Lift: 2 type 8V92TI Detroit diesels; shp not available; 2 double-inlet centrifugal 40 in diameter lift fans = 40 knots
Complement: 22 (plus up to 275 troops before lengthening)

A Surface-Effect Ship developed as a joint venture between Bell Aerospace Textron and Halter-Marine Inc beginning in 1977. The US Navy, US Coast Guard and the Urban Mass Transportation Administration ran a one month test and evaluation programme off the Coast of Virginia in February and March 1980. The test showed that the craft could operate in seas up to Sea State four and perform well in all types of manoeuvres. The Coast Guard was considering this craft as a replacement for their 95 ft "Point" class WPBs. Purchased by the Navy in September 1980 for further testing. On 30 September 1980, a contract was awarded to Bell-Halter Inc, New Orleans, Louisiana to add a 50 ft mid-section to the hull and living quarters for 14 personnel (the original length of this craft was 110 ft). Cost of the contract was $4 125 000.

The SES-110BH is a waterborne, air-supported craft with catamaran-style rigid sidehulls. It uses a cushion of air trapped between the sidehulls and flexible bow and stern seals to lift a large part of the hull clear of the water to reduce drag. A portion of the sidehull remains in the water to aid in stability and manoeuvrability.

SES-110BH *1980, Bell Halter*

RESEARCH SHIPS

(Not included in US Naval Vessel Register)

2 "COVE" CLASS Ex-INSHORE MINESWEEPERS (MSI): RESEARCH SHIPS

Name	*No.*	*Builders*	*In Service*
COVE	ex-MSI 1	Bethlehem Shipyards Co, Bellingham	20 Nov 1958
CAPE	ex-MSI 2	Bethlehem Shipyards Co, Bellingham	27 Feb 1959

Displacement, tons: 120 light; 240 full load
Dimensions, feet (metres): 105 × 22 × 10 *(32 × 6·7 × 3)*
Guns: Removed
Main engine: Diesel (General Motors); 650 bhp; 1 shaft = 12 knots
Complement: 21 (3 officers, 18 men)

These ships were prototype inshore minesweepers (MSI) authorised under the FY 1956 new construction programme. *Cape* laid down on 1 May 1957 and launched on 5 April 1958; *Cove* laid down 1 February 1957 and launched 8 February 1958.

Cape is operated by the Naval Undersea Research Development Center, San Diego, California; neither in service nor in commission. *Cove* transferred to Johns Hopkins Applied Physics Laboratory on 31 July 1970 with the same status. Both conduct Navy research.

Neither ship is now in the Navy List but are rated as "floating equipment". Both active.

CAPE (as MSI) *1968, USN*

MILITARY SEALIFT COMMAND

(See also under Auxiliaries section)

Sealift ships provide ocean transportation for all components of the Department of Defense. These ships are operated by the Navy's Military Sealift Command (MSC), renamed on 1 August 1970 from Military Sea Transportation Service (MSTS). Sealift cargo ships and tankers are not configured to land stores over the beach in amphibious landings. Three MSC-operated cargo ships are fitted to carry Submarine-Launched Ballistic Missiles (SLBM) and other supplies for US Poseidon and one Trident submarines. On 1 February 1981 there was a total of 78 ships in the MSC nucleus fleet of which 71 were fully active and seven were inactive.

Most US defence cargo is carried in commercial merchant ships under charter to the government (through the Military Sealift Command). A list of ships on charter to MSC is at the beginning of the USA entry.

The Commander, Deputy Commander, and Area Commanders of the MSC (Atlantic, Pacific, and Far East) are flag officers of the Navy on active duty. All ships are civilian manned with most of their crews being Civil Service employees of the Navy. However, the tankers are operated under contract to commercial tanker lines and are manned by merchant seamen.

The Military Sealift Command also operates a number of underway replenishment (UNREP) ships, fleet support ships, and special projects ships that support other defence-related activities, mostly research, surveying and missile-range support ships. This section also includes research ships on loan to various civilian research institutions.

Armament: No ship of the Military Sealift Command is armed in peacetime.

Classification: Military Sealift Command ships are assigned standard US Navy hull designations with the added designation prefix "T". Ships in this category are referred to as "USNS" (United States Naval Ship) instead of "USS" (United States Ship) which is used for Navy-manned ships.

Recognition: From 1979/80 the MSC adopted the practice of painting hull numbers on T-AOs to distinguish them from T-AOTs eg. *Neosho* 0-143.

1 "RIGEL" CLASS: STORE SHIP (AF)

Name	*No.*	*Launched*	*Commissioned*	*F/S*
RIGEL	T-AF 58	15 Mar 1955	2 Sep 1955	TAA

Displacement, tons: 7 950 light; 15 540 full load
Dimensions, feet (metres): 502 × 72 × 27 *(153 × 22 × 8·2)*
Guns: None
Main engine: Geared turbine (General Electric); 16 000 shp; 1 shaft = 16 knots
Boilers: 2 (Combustion Engineering)
Complement: Approx 350

Built by Ingalls Shipbuilding Co, Pascagoula. R3-S-A4 type. Helicopter platform fitted aft. *Rigel* was assigned to Military Sealift Command on 23 June 1975 (guns removed). Operates in the Indian Ocean.

Radar: CAS 1650/6X.

RIGEL *1978, Dr. Giorgio Arra*

1 + (1) ex-BRITISH "LYNESS" CLASS: COMBAT STORES SHIP (AFS)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
SIRIUS (ex-*RFA Lyness*)	T-AFS 8	Swan Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	22 Dec 1966	TAA

Displacement, tons: 9 010 light; 16 792 full load (14 000 normal operating)
Measurement, tons: 7 782 deadweight; 12 359 gross; 4 744 net
Dimensions, feet (metres): 524 × 72 × 22 *(159·7 × 22 × 6·7)*
Aircraft: 1 Sea King helicopter
Main engine: 1 Wallsend-Sulzer 8-cyl RD 76 diesel; 11 520 bhp = 18 knots
Range, miles: 12 000 at 16 knots
Complement: 116 (with a Navy contingent of 1 officer and 17 enlisted men)

Lifts and mobile appliances provided for handling stores internally, and a new replenishment at sea system and a helicopter landing platform for transferring loads at sea. A novel feature of the ship is the use of closed-circuit television to monitor the movement of stores. Air-conditioned. *Lyness* was launched on 7 April 1966 and cost £3·5 million (US $8·2 million). Acquired on bare-boat charter, for one year, from the Royal Navy on 17 January 1981. Instated on the Naval Vessel Register, named *Sirius* and classified as AFS 8 on 17 January 1981. To be purchased at the end of the charter for about $200 million. Prior to charter had undergone a £3 million overhaul in a British Shipyard which completed in October 1980. As it would cost about $300 million and six years to build an equivalent ship, it was decided to charter the ship for a year and then purchase it in January 1982. Deployed to the Sixth Fleet in March 1981 freeing USNS *Rigel* (T-AF 58) to operate solely in the Indian Ocean rather than both the Indian Ocean and the Mediterranean. Negotiations are underway to purchase a second unit of this class, RFA *Tarbatness*, from the Royal Navy. If purchased she would become AFS 9. She is currently laid up in reserve at Gibraltar.

SIRIUS (as RFA LYNESS) *7/1980, C. and S. Taylor*

1 CONVERTED "VICTORY" TYPE: MISCELLANEOUS (AG)

Name	*No.*	*Builders*	*F/S*
KINGSPORT (ex-*Kingsport Victory*)	T-AG 164	California S.B. Corp	TAA

Displacement, tons: 7 190 light; 10 680 full load
Dimensions, feet (metres): 455 × 62 × 22 *(138·7 × 18·9 × 6·7)*
Main engines: Geared turbines; 8 500 shp; 1 shaft = 16·5 knots
Boilers: 2
Complement: 70 (13 officers, 42 men, 15 technicians)

Maritime Administration type VC2-S-AP3. Converted in 1961-62 into the world's first satellite communications ship, for Project Advent.
Operated for Naval Electronic Systems Command. Re-assigned to hydrographic work in 1966.

Radar: TM 1650/9X and TM 1660/12S.

KINGSPORT *1/1976, Michael D. J. Lennon*

1 CONVERTED "MISSION" CLASS: MISCELLANEOUS (AG)

Name	*No.*	*Builders*	*Delivered*	*F/S*
VANGUARD (ex-*Muscel Shoals, ex-Mission San Fernando*)	T-AG 194 (ex-AGM 19, ex-AO 122)	Marine Ship Corp, Sausalito, Calif	29 Feb 1944	TAA

In 1980/81, USNS *Vanguard* was modified to replace the *Compass Island* (AG 153) as test ship for Fleet Ballistic Missile guidance and ship navigation systems. For characteristics and data see under Converted "Mission" Class AGM.
Vanguard was transferred to the Navy's Strategic Systems project office on 1 October 1978. The contract for her overhaul and modification for this new mission as replacement for *Compass Island* (AG 153) was awarded to Todd Shipyard Corp, San Francisco on 1 April 1980. Cost $9·9 million for overhaul and conversion. The main change in *Vanguard*'s appearance is the removal of her radar antennae and pedestals amidships. Reclassified as AG 194 on 30 September 1980.

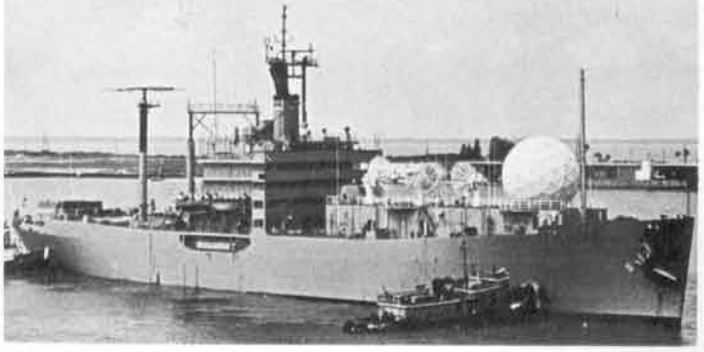
1 CONVERTED "HASKELL" CLASS: MISSILE RANGE INSTRUMENTATION SHIP (AGM)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
RANGE SENTINEL (ex-*Sherburne*)	T-AGM 22 (ex-APA 205)	Permanente Metals Corp, Richmond, Calif	20 Sep 1944	TAA

Displacement, tons: 11 800 full load
Dimensions, feet (metres): 455 × 62 × 23 *(138·7 × 18·9 × 7)*
Main engine: Turbine (Westinghouse); 8 500 hp; 1 shaft = 17·7 knots
Boilers: 2 (Combustion Engineering)
Complement: 95 (14 officers, 54 men, 27 technical personnel)

Former attack transport (APA) converted specifically to serve as a range instrumentation ship in support of the Poseidon Fleet Ballistic Missile (FBM) programme. Maritime Administration VC2-S-AP5 type. Renamed *Range Sentinel* on 26 April 1971.
In Maritime Administration reserve from 1 October 1958 until 22 October 1969.
Converted from October 1969 to October 1971; placed in service as T-AGM 22 on 14 October 1971.

Radar: TM 1650/6X and TM 1660/12S.



RANGE SENTINEL *1978, USN*

1 CONVERTED "COMPASS ISLAND" CLASS: MISSILE RANGE INSTRUMENTATION SHIP (AGM)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
OBSERVATION ISLAND (ex-*Empire State Mariner*)	T-AGM 23 (ex-AG 154, ex-YAG 57)	New York S.B. Corp, NJ	5 Dec 1958	PAA

Displacement, tons: 16 076 full load
Dimensions, feet (metres): 564 × 78 × 31 *(171·6 × 23·8 × 9·5)*
Main engines: Geared turbines (General Electric); 19 250 shp; 1 shaft = 20 knots
Boilers: 2 (Foster-Wheeler)
Complement: 78 + 60-65 technicians

Built as a "Mariner" class merchant ship (C4-S-A1 type); launched on 15 August 1953; acquired by the Navy on 10 September 1956 for use as a Fleet Ballistic Missile (FBM) test ship. Converted at Norfolk Naval Shipyard. In reserve from September 1972. On 18 August 1977, *Observation Island* was reacquired by the US Navy from the Maritime Administration and transferred to the Military Sealift Command. Converted to Missile Range Instrumentation Ship from July 1979-April 1981 at Maryland S.B. and D.D. Co, Baltimore, Maryland. Reclassified AGM 23 on 1 May 1979. Now under the operational control of the US Air Force, US Navy retaining title.

Missile testing: She fired the first ship-launched Polaris missile at sea on 27 August 1959. Refitted to fire the improved Poseidon missile in 1969 and launched the first Poseidon test missile fired afloat on 16 December 1969.

Tasks: In her new role she will carry an Air Force ship-borne phased-array radar system (Cobra Judy) for missile and space research development.

OBSERVATION ISLAND *1980, C. N. Dragonette*

1 CONVERTED "MISSION" CLASS: MISSILE RANGE INSTRUMENTATION SHIP (AGM)

Name	*No.*	*Builders*	*Completed*	*F/S*
REDSTONE (ex-*Johnstown*, ex-*Mission de Pala*)	T-AGM 20 (ex-AO 114)	Marine Ship Corp, Sausalito, Calif	22 Apr 1944	TAA

Displacement, tons: 22 310 full load
Dimensions, feet (metres): 595 × 75 × 25 *(181·4 × 22·9 × 7·6)*
Main engines: Turbo-electric (Westinghouse); 10 000 shp; 1 shaft = 14 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 20 officers, 71 enlisted men, 120 technical personnel

Maritime Administration T2-SE-A2 type. Converted in 1964-66 to serve as mid-ocean communications and tracking ship in support of the Apollo manned lunar flights.
Converted to range instrumentation ship by General Dynamics Corp, Quincy Division, Massachusetts; was cut in half and a 72 ft mid-section was inserted, increasing length, beam, and displacement; approximately 450 tons of electronic equipment installed for support of lunar flight operations, including communications and tracking systems; balloon hangar and platform fitted aft. Operated for NASA Goddard Space Flight Centre.

Radar: TM 1650/9X and TM 1660/12S.

REDSTONE *1980*

2 CONVERTED C4-S-A1 TYPE: MISSILE RANGE INSTRUMENTATION SHIPS (AGM)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
GENERAL H. H. ARNOLD (ex-USNS *General R. E. Callan*)	T-AGM 9 (ex-AP 139)	Kaiser Co, Richmond, Calif	17 Aug 1944	TAA
GENERAL HOYT S. VANDENBERG (ex-USNS *General Harry Taylor*)	T-AGM 10 (ex-AP 145)	Kaiser Co, Richmond, Calif	1 Apr 1944	TAA

Displacement, tons: 16 600 full load
Dimensions, feet (metres): 552·9 × 71·5 × 26·3 *(168·5 × 21·8 × 8)*
Main engines: Geared turbines (Westinghouse); 8 500 shp; 1 shaft = 17 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 205 (21 officers, 71 men, 113 technical personnel)

Maritime Administration C4-S-A1 type. Former troop transports converted in 1962-63 for monitoring Air Force missiles firing and satellite launches. Upon conversion to range instrumentation ships they were placed in service in 1963 under Air Force operation, however assigned to MSTS for operation on 1 July 1964 *(Arnold)* and 13 July 1964 *(Vandenberg)*. Both ships are operated for Air Force Eastern Test Range in Atlantic.

Radar: RM 1650/12X and RM 1660/12S (in *Arnold*; TM versions in *Vandenberg*).

GENERAL HOYT S. VANDENBERG *1980*

2 "GYRE" CLASS: OCEANOGRAPHIC RESEARCH SHIPS (AGOR)

Name	*No.*	*Builders*	*Completed*	*F/S*
GYRE	AGOR 21	Halter Marine Service, New Orleans	14 Nov 1973	Loan
MOANA WAVE	AGOR 22	Halter Marine Service, New Orleans	16 Jan 1974	Loan

Displacement, tons: 950 full load
Dimensions, feet (metres): 165 × 36 × 14·5 *(50·3 × 11 × 4·4)*
Main engines: Turbo-charged diesels (Caterpillar); 1 700 bhp; 2 shafts; (cp propellers) = 12 knots
Complement: 21 (10 crew, 11 scientists)

Based on a commercial ship design. Laid down on 9 October 1972 and 10 October 1972 respectively; launched on 25 May 1973 and 18 June 1973. Fitted with a 150 hp retractable pod for low-speed or station keeping with main machinery shut down. Open deck aft provides space for equipment vans to permit rapid change of mission capabilities. Each ship cost approximately $1·9 million. Single hard-chine hulls.
They are assigned for operation to Texas A & M University and the University of Hawaii, respectively.

MOANA WAVE *7/1979, Dr. Giorgio Arra*

1 "HAYES" CLASS: OCEANOGRAPHIC RESEARCH SHIP (AGOR)

Name	*No.*	*Builders*	*Completed*	*F/S*
HAYES	T-AGOR 16	Todd Shipyards, Seattle	21 July 1971	TAA

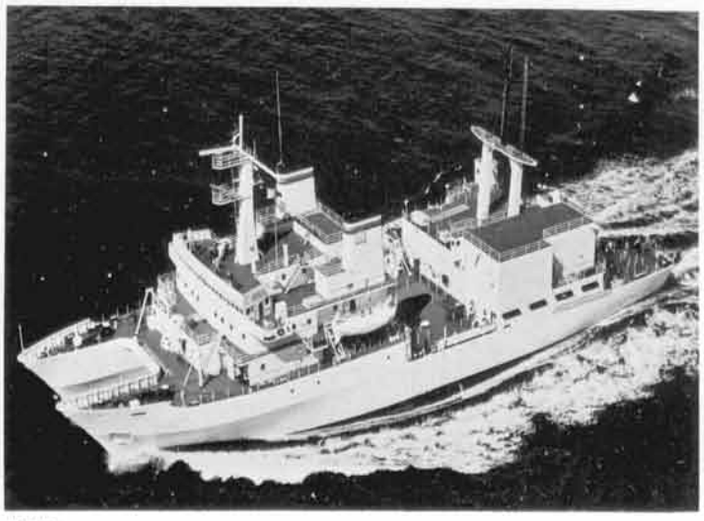
Displacement, tons: 2 876 full load
Dimensions, feet (metres): 246·5 × 75 (see *Design* note) × 22 *(75·1 × 22·9 × 6·7)*
Main engines: Geared diesels (General Motors); 5 400 bhp; 2 shafts; (cp propeller) = 15 knots
Range, miles: 6 000 at 13·5 knots
Complement: 74 (11 officers, 33 men, 30 scientists)

Hayes is one of two classes of modern US naval ships to have a catamaran hull, the other being the ASR 21 class submarine rescue ships. Laid down 12 November 1969; launched 2 July 1970. Estimated cost was $15·9 million.
Operated for the Office of Naval Research under the technical control of the Oceanographer of the Navy.

Design: Catamaran hull design provides large deck working area, centre well for operating equipment at great depths, and removes laboratory areas from main propulsion machinery. Each hull is 246·5 ft long and 24 ft wide (maximum). There are three 36-in diameter instrument wells in addition to the main centre well.

Engineering: An auxiliary 165 bhp diesel is fitted in each hull to provide "creeping" speed of 2 to 4 knots. Separation of cp propellers by catamaran hull separation provides high degree of manoeuvrability eliminating the need for bow thrusters.

Radar: TM 1650/6X and TM 1660/12S.



HAYES *1980*

7 "ROBERT D. CONRAD" CLASS: OCEANOGRAPHIC RESEARCH SHIPS (AGOR)

Name	*No.*	*Builders*	*Completed*	*F/S*
ROBERT D. CONRAD	AGOR 3	Gibbs Corp, Jacksonville	29 Nov 1962	Loan
JAMES M. GILLISS	AGOR 4	Christy Corp, Sturgeon Bay	5 Nov 1962	Loan
LYNCH	T-AGOR 7	Marinette Mfg Co, Point Pleasant	27 Mar 1965	TAA
THOMAS G. THOMPSON	AGOR 9	Marinette Marine Corp, Wisc	24 Aug 1965	Loan
THOMAS WASHINGTON	AGOR 10	Marinette Marine Corp, Wisc	27 Sep 1965	Loan
DE STEIGUER	T-AGOR 12	Northwest Marine Iron Works, Portland, Oregon	28 Feb 1969	TPA
BARTLETT	T-AGOR 13	Northwest Marine Iron Works, Portland, Oregon	31 Mar 1969	TAA

Displacement, tons: 950-1 200 light; 1 362-1 370 full load
Dimensions, feet (metres): 208·9 × 40 × 15·3 *(63·7 × 12·2 × 4·7)*
Main engines: Diesel-electric (Caterpillar Tractor Co diesels (3 and 4); Cummins in rest); 1 000 bhp; 1 shaft = 13·5 knots
Range, miles: 12 000 at 12 knots
Complement: 41 (9 officers, 17 men, 15 scientists except *De Steiguer* and *Bartlett*, 8 officers, 18 men)

This is the first class of ships designed and built by the US Navy for oceanographic research. Fitted with instrumentation and laboratories to measure gravity and magnetism, water temperature, sound transmission in water, and the profile of the ocean floor. Special features include 10 ton capacity boom and winches for handling over-the-side equipment; bow thruster; 620 hp gas turbine (housed in funnel structure) for providing "quiet" power when conducting experiments; can propel the ship at 6·5 knots.
Robert D. Conrad laid down on 19 January 1961 and launched on 26 May 1962. Operated by Lamont Geological Observatory of Columbia University under technical control of the Oceanographer of the Navy.
James M. Gilliss laid down on 31 May 1961 and launched on 19 May 1962. Laid up at Maritime Administration, Beaumont, Texas 18 March 1980 prior to transfer to Mexico.
Lynch laid down on 7 September 1962 and launched on 17 March 1964. Operated by Military Sealift Command under the technical control of the Oceanographer of the Navy.
Thomas G. Thompson laid down on 12 September 1963 and launched on 18 July 1964. Operated by University of Washington (State) under technical control of the Oceanographer of the Navy.
Thomas Washington laid down on 12 September 1963 and launched on 1 August 1964. Operated by Scripps Institution of Oceanography (University of California) under technical control of the Oceanographer on the Navy.
De Steiguer and *Bartlett* laid down on 12 November 1965 and 18 November 1965 and launched on 21 March 1966 and 24 May 1966. Operated by Military Sealift Command under the technical control of the Oceanographer of the Navy.

Radar: *Lynch* and *De Steiguer:* TM 1650/6X and TM 1660/12S.
Bartlett: TM 1660/12S.

Transfers: Ships of this class are in service with Brazil *(Sands)* and New Zealand *(Charles H. Davies)*.

DE STEIGUER *1978, Dr. Giorgio Arra*

2 "MELVILLE" CLASS: OCEANOGRAPHIC RESEARCH SHIPS (AGOR)

Name	*No.*	*Builders*	*Completed*	*F/S*
MELVILLE	AGOR 14	Defoe S.B. Co, Bay City, Mich	27 Aug 1969	Loan
KNORR	AGOR 15	Defoe S.B. Co, Bay City, Mich	14 Jan 1970	Loan

Displacement, tons: 1 915 full load
Dimensions, feet (metres): 244·9 × 46·3 × 15 *(74·7 × 14·1 × 4·6)*
Main engines: 2 diesels (De Laval); 2 500 bhp; 2 cycloidal propellers = 12·5 knots
Range, miles: 10 000 at 12 knots
Complement: 50 (9 officers, 16 men, 25 scientists)

Oceanographic research ships of an advanced design fitted with internal wells for lowering equipment, underwater lights and observation ports. Facilities for handling small research submersibles.
Melville and *Knorr* laid down on 12 July 1967 and 9 August 1967 respectively; launched 10 July 1968 and 21 August 1968. *Melville* operated by Scripps Institution of Oceanography and *Knorr* by Woods Hole Oceanography Institution for the Office of Naval Research, under technical control of the Oceanographer of the Navy.

Engineering: First US Navy ocean-going ships with cycloidal propellers permitting the ships to turn 360 degrees in their own length. One propeller is fitted at each end of the ship, providing movement in any direction and optimum station keeping without use of thrusters. They have experienced engineering difficulties.

MELVILLE *1980*

2 CONVERTED "ELTANIN" CLASS: OCEANOGRAPHIC RESEARCH SHIPS (AGOR)

Name	*No.*	*Builders*	*In Service*	*F/S*
ELTANIN (ex-*Eltanin*, ex-*Islas Orcadas*)	T-AGOR 8 (ex-T-AK 270, ex-Q 9)	Avondale Marine Ways, New Orleans	2 Aug 1957	MAR
MIZAR	T-AGOR 11 (ex-T-AK 272)	Avondale Marine Ways, New Orleans	7 Mar 1958	TPA

Displacement, tons: 2 036 light; 3 481 full load
Dimensions, feet (metres): 262·2 × 51·5 × 18·7 *(79·9 × 15·7 × 5·7)*
Main engines: Diesel-electric (ALCO diesels, Westinghouse electric motors) 2 700 bhp; 2 shafts = 12 knots
Complement: 56 (11 officers, 30 enlisted men, 15 scientists)

C1-ME2-13a type. Built for Military Sea Transportation Service. Designed for Arctic operation with hull strengthened against ice. Delivered as cargo ship to MSTS and subsequently converted to oceanographic research ships.
Mizar was operated by the Military Sealift Command for Naval Research Laboratory, under technical control of the Oceanographer of the Navy. Transferred to technical control of Naval Electronics Command on 1 July 1975. *Eltanin*, after serving in Argentina, was returned to USN on 1 August 1979 and transferred to Maritime Administration on 2 August 1979 to be laid up at James River.

Conversion: *Mizar* converted in 1962 into deep sea research ship. Equipped with centre well for lowering oceanographic equipment including towed sensor platforms, fitted with laboratories and elaborate photographic facilities, hydrophone system and computer for seafloor navigation and tracking towed vehicles. *Mizar* had key roles in the searches for the US nuclear submarines *Thresher* and *Scorpion*, the French submarine *Eurydice*, and recovery of the H-bomb lost at sea off Palomares, Spain.

Radar: TM 1650/6X.

MIZAR *1980*

0 + 8 + 10 OCEAN SURVEILLANCE SHIPS (AGOS)

Name	No.	Builders	Completed	F/S
—	T-AGOS 1	Tacoma Boatbuilding Co, Tacoma, Wash	Mar 1983	Bldg
—	T-AGOS 2	Tacoma Boatbuilding Co, Tacoma, Wash	June 1983	Bldg
—	T-AGOS 3	Tacoma Boatbuilding Co, Tacoma, Wash	Aug 1983	Bldg
—	T-AGOS 4	Tacoma Boatbuilding Co, Tacoma, Wash	Nov 1983	Bldg
—	T-AGOS 5	Tacoma Boatbuilding Co, Tacoma, Wash	Jan 1984	Bldg
—	T-AGOS 6	Tacoma Boatbuilding Co, Tacoma, Wash	Apr 1984	Bldg
—	T-AGOS 7	Tacoma Boatbuilding Co, Tacoma, Wash	June 1984	Bldg
—	T-AGOS 8	Tacoma Boatbuilding Co, Tacoma, Wash	Sep 1984	Bldg
—	T-AGOS 9/12	Requested under FY 1982 programme	—	Proj
—	T-AGOS 13/15	Proposed under FY 1983 programme	—	Proj
—	T-AGOS 16/18	Proposed under FY 1984 programme	—	Proj

Displacement, tons: approx 2 500
Dimensions, feet (metres): 217 approx × 42 × — *(66·1 × 12·8 × —)*
Main engines: Diesel-electric; 2 shafts = 11 knots
Complement: Civilians and navy contingent

Originally it was planned to construct 12 ships of this class to operate the new SURTASS (Surveillance Towed Array Sensor System). The programme has now grown to 18 ships with at least six more under consideration. Tacoma Boatbuilding has a contract to build the first 12 ships. AGOS 1 was approved in the FY 1979 programme, AGOS 2 and 3 in the FY 1980 programme and AGOS 4-8 in the FY 1981 programme. Delays in the SURTASS sonar testing led to postponing the programme to the current schedule. The FY 1981 programme ships are scheduled to cost approximately $35·8 million each while the FY 1982 ships are estimated to cost $40 million each. Building time is estimated at 18 months each.

T-AGOS *1980, USN*

0 + 2 CONVERTED "C3-S-33a" TYPE: SURVEYING SHIPS (AGS)

Under the FY 1984 programme it is planned to convert the ex-M/V *Mormacpride* and *Mormacscan* to Surveying Ships to replace USNS *Bowditch* (T-AGS 21) and USNS *Dutton* (T-AGS 22). Conversion will take an estimated 18 months each. Hull numbers AGS 40 and 41 will be assigned. See under "Converted "C3-S-33a" type: Cargo Ships (AK)" for general characteristics as commercial vessels.

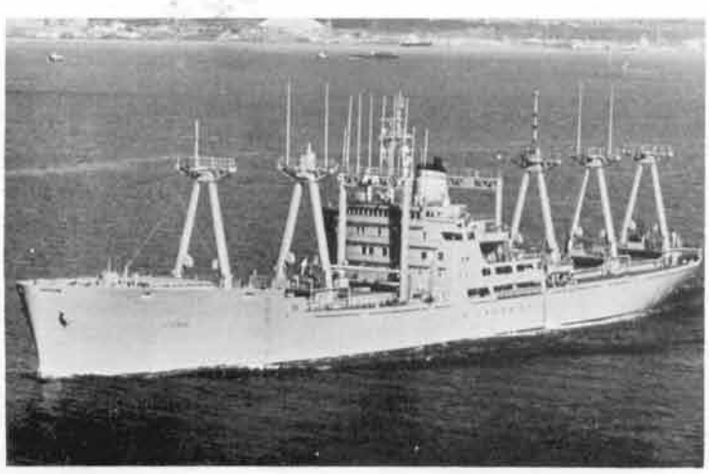
1 CONVERTED "C4-S-A1" TYPE: SURVEYING SHIP (AGS)

Name	No.	Builders	In Service	F/S
H. H. HESS (ex-M/V *Canada Mail*)	T-AGS 38	National Steel & S.B. Co.	16 Jan 1978	TPA

Displacement, tons: 22 625 full load
Measurement, tons: 14 747 deadweight
Dimensions, feet (metres): 535·7 × 76 × 41 *(163·3 × 23·2 × 12·5)*
Main engines: Geared turbines (GE); 19 250 shp; 1 shaft = 20 knots
Boilers: 2 (Foster-Wheeler)
Complement: 57

Merchant ship completed in 1965 and acquired by the Navy 9 July 1976 for conversion to replace the "Victory" class surveying ship USNS *Michelson* (T-AGS 23). Above data as merchant ship. As a hydrographic survey ship she is operated for the Oceanographer of the Navy. Converted at National Steel and S.B. Co San Diego between March 1977 and January 1978.

Radar: RM 1650/6X and RM 1660/12S.



H. H. HESS *1980, USN*

2 "CHAUVENET" CLASS: SURVEYING SHIPS (AGS)

Name	No.	Builders	Completed	F/S
CHAUVENET	T-AGS 29	Upper Clyde Shipbuilders, Glasgow	13 Nov 1970	TPA
HARKNESS	T-AGS 32	Upper Clyde Shipbuilders, Glasgow	29 Jan 1971	TAA

Displacement, tons: 3 670 full load
Dimensions, feet (metres): 393·2 × 54 × 16 *(119·8 × 16·5 × 4·9)*
Main engine: 1 Alco diesel; 3 600 bhp; 1 shaft = 15 knots
Complement: 175 (13 officers, approx 150 men and technical personnel, 12 scientists)

Capable of extensive military hydrographic and oceanographic surveys, supporting coastal surveying craft, amphibious survey teams and helicopters. Fitted with two helicopter hangars and platform.
Chauvenet authorised in the FY 1965 new construction programme; *Harkness* in the FY 1966 programme. Laid down on 24 May 1967 and 30 June 1967 respectively; launched on 13 May 1968 and 12 June 1968.
These ships are operated for the Oceanographer of the Navy with Navy detachments on board.

Radar: *Chauvenet:* TM 1650/6X and TM 1660/12S.
Harkness: TM 1650/6X.

CHAUVENET *1980*

4 "SILAS BENT" and "WILKES" CLASSES: SURVEYING SHIPS (AGS)

Name	No.	Builders	Completed	F/S
SILAS BENT	T-AGS 26	American S.B. Co, Lorain	23 July 1965	TPA
KANE	T-AGS 27	Christy Corp, Sturgeon Bay	19 May 1967	TAA
WILKES	T-AGS 33	Defoe S.B. Co, Bay City, Mich	28 June 1971	TAA
WYMAN	T-AGS 34	Defoe S.B. Co, Bay City, Mich	3 Nov 1971	TAA

Displacement, tons: 1 935 standard; 2 420-2 580 full load
Dimensions, feet (metres): 285·3 × 48 × 15·1 *(87 × 14·6 × 4·6)*
Main engines: Diesel-electric (diesels; Westinghouse in 26; Alco in 27; GE in others); 3 000 bhp; 1 shaft = 15 knots
Complement: 77/78 (12 officers, 35 or 36 men, 30 scientists)

These ships were designed specifically for surveying operations. Bow propulsion unit for precise manoeuvrability and station keeping. All ships in commission operated for the Oceanographer of the Navy.
Laid down on 2 March 1964, 19 December 1964, 18 July 1968 and 18 July 1968 respectively; launched on 16 May 1965, 20 November 1965, 31 July 1969 and 30 October 1969.

Radar: RM 1650/9X and TM 1660/12S *(Silas Bent)*.

WILKES *12/1980, Michael D. J. Lennon*

2 CONVERTED "VICTORY" CLASS: SURVEYING SHIPS (AGS)

Name	*No.*	*Builders*	*Completed*	*F\S*
BOWDITCH (ex-SS *South Bend Victory*)	T-AGS 21	Oregon S.B. Co	July 1945	TAA
DUTTON (ex-SS *Tuskegee Victory*)	T-AGS 22	South Coast Co, Newport Beach	June 1945	TPA

Displacement, tons: 13 050 full load
Dimensions, feet (metres): 455·2 × 62·2 × 25 *(138·7 × 19 × 7·6)*
Main engine: Geared turbine (GE in 21; Westinghouse in 22); 8 500 shp; 1 shaft = 17 knots
Boilers: 2
Complement: 100 (13 officers, 47 men, approx 40 technical personnel)

VC2-S-AP3 type ships. Converted to support the Fleet Ballistic Missile Programme, *Dutton* at Philadelphia Naval Shipyard 8 November 1957 to 16 November 1958 and *Bowditch* at Charleston Naval Shipyard 10 October 1957 to 30 September 1958.
Designed for general surveying and to record magnetic fields and gravity.
Operated for the Oceanographer of the Navy. To be replaced in FY 1985 by AGS 40 and 41.

Radar: TM 1650/9X and TM 1660/12S.

BOWDITCH *1976, Michael D. J. Lennon*

2 + 1 + (?2) CONVERTED "C3-S-33a" TYPE: CARGO SHIPS (AK)

Name	*No.*	*Completed*	*F\S*
NORTHERN LIGHT (ex-SS *Cove*, ex-*Mormaccove*)	T-AK 284	1961	TAA
SOUTHERN CROSS (ex-SS *Trade*, ex-*Mormactrade*)	T-AK 285	1962	TPA
KINGS BAY (ex-SS *Bay*, ex-*Mormacbay*)	T-AK 286	1960	Conv
— (ex-SS *Lake*, ex-*Mormaclake*)	T-AK ?	1961	Proj
— (ex-SS *Cape*, ex-*Mormaccape*)	T-AK ?	1961	Proj

Displacement, tons: 15 404 full load
Measurement, tons: *Northern Light:* 6 667 gross; 3 845 deadweight
Southern Cross: 6 596 gross; 3 804 deadweight
Kings Bay: 6 590 gross; 3 801 deadweight
ex-SS *Lake:* 6 596 gross; 3 804 deadweight
ex-SS *Cape:* 6 595 gross; 3 815 deadweight

Dimensions, feet (metres): 483·3 × 68 × 41·5 *(147·2 × 20·7 × 12·6)*
Main engines: Steam turbines (General Electric); 12 100 shp; 1 shaft = 19 knots (except *Southern Cross* and SS *Cape*: 18 knots)
Boilers: 2 Combustion Engineering
Complement: 67 total plus 7 man naval contingent

All were built by Sun Shipbuilding and Drydock Co, Chester, Pennsylvania except ex-SS *Cape* which was built by Todd Shipyards Corp, San Pedro, California. Built for the Moore-McCormack Lines. Characteristics as merchant ships. All were laid up in the Maritime Administration Reserve Fleet in the late 1970s as uneconomical to operate due to age and changing shipping patterns. Eight ships of this class were built and seven will be acquired by the Navy over the next several years. Ex-SS *Pride, Mormacpride* and ex-SS *Scan, Mormacscan* of this class are scheduled to be converted to AGS 40 and AGS 41. The above characteristics also apply to them. *Northern Light* (AK 284) and *Southern Cross* (AK 285) were both acquired in FY 1980, for general cargo hauling, replacing USNS *Pvt. John R. Towle* (T-AK 240) and USNS *Pvt. Leonard C. Brostrom* (T-AK 255) respectively. *Northern Light* was acquired, classified and instated on the Naval Vessel Register on 22 April 1980 and *Southern Cross* on 30 April 1980. The conversion of *Kings Bay* (AK 286) was approved under the FY 1981 programme at a cost of $50 million. She will be converted to an FBM Support Ship as a replacement for USNS *Victoria* (T-AK 281). Contract for the conversion to support the Poseidon SSBNs backfitted with the Trident missile was awarded in April 1981. She will be capable of carrying 16 Trident missiles. She will be equipped with eight 10-ton capacity booms, four five ton capacity booms and one 75-ton capacity boom. The seven man Navy contingent will provide security. Conversion is scheduled to start in late April 1981 with scheduled completion in October 1982. Ex-SS *Cape, Mormaccape* is scheduled to be acquired and converted to an FBM support ship as replacement for USNS *Marshfield* (T-AK 282). Conversion is to be requested in the FY 1984 programme. Her conversion is scheduled to take 36 months completing in June 1987. Until then, she will remain at the Maritime Reserve Fleet, James River, Virginia. Ex-SS *Lake, Mormaclake* is also scheduled to be acquired, but her exact employment has not yet been defined.

NORTHERN LIGHT *1980 USN*

1 CONVERTED "ANDROMEDA" CLASS: CARGO SHIP (AK)

Name	*No.*	*Builders*	*Commissioned*	*F\S*
WYANDOT	AK 283 (ex-AKA 92, ex-T-AKA 92)	Moore D.D. Co, Oakland	30 Sep 1944	MPR

Displacement, tons: 7 430 light; 11 000 full load
Dimensions, feet (metres): 459·2 × 63 × 28 *(140 × 19·2 × 8·5)*
Main engines: Geared turbines (General Electric); 6 000 shp; 1 shaft = 16·5 knots
Boilers: 2 (Combustion Engineering)
Complement: 423 (38 officers, 385 enlisted men) (as AKA)

Former attack cargo ship (AKA) of the merchant C2-S-B1 type. Launched on 28 June 1944; commissioned as AKA 92. Designation changed to AK 283 on 1 January 1969. Winterised for arctic service.
On 5 March 1976 transferred to Maritime Administration for lay-up in the fleet at Suisun Bay. Remains on Navy List.

3 "NORWALK" CLASS: CARGO SHIPS (AK)

Name	*No.*	*F\S*
FURMAN (ex-*Furman Victory*)	T-AK 280	TPA
VICTORIA (ex-*Ethiopia Victory*)	T-AK 281	TAA
MARSHFIELD (ex-*Marshfield Victory*)	T-AK 282	TAA

Displacement, tons: 6 700 light; 11 000/11 300 full load
Dimensions, feet (metres): 455·25 × 62 × 22 *(138·8 × 18·9 × 6·7)*
Main engine: Geared turbine; 8 500 shp; 1 shaft = 17 knots
Boilers: 2 (Babcock & Wilcox, 280; Combustion Engineering, 281-282)
Complement: 80 to 90 plus Navy detachment

Former merchant ships of the VC2-S-AP3 "Victory" type built during World War II. Extensively converted to supply tenders for Fleet Ballistic Missile (FBM) submarines. Fitted to carry torpedoes, spare parts, packaged petroleum products, bottled gas, black oil and diesel fuel, frozen and dry provisions, and general cargo as well as missiles. No 3 hold converted to carry 16 Polaris missiles in vertical position; tankage provided for 355 000 gallons (US) of diesel oil and 430 000 gallons (US) of fuel oil (for submarine tenders). All subsequently modified to carry Poseidon missiles. All are operated by the Military Sealift Command with civilian operating crews; a small Navy detachment in each ship provides security and technical services.

Conversion: *Furman* converted by American Shipbuilding Co, and accepted on 7 October 1964; *Victoria* converted by Philadelphia Naval Shipyard, and accepted on 15 October 1965; and *Marshfield* converted by Boland Machine & Manufacturing Co, and accepted on 28 May 1970. *Victoria* will be replaced by *Kings Bay* (T-AK 286) in FY 1982 and *Marshfield* by ex-MV *Mormaccape* in FY 1987.

Radar: TM/RM 1650/6X and TM 1660/12S.

VICTORIA *6/1979, A. Denholm*

1 "ELTANIN" CLASS: CARGO SHIP (AK)

Name	*No.*	*Builders*	*Completed*	*F\S*
MIRFAK	T-AK 271	Avondale Marine Ways, New Orleans	30 Dec 1957	TAR

Displacement, tons: 2 022 light; 3 886 full load
Dimensions, feet (metres): 262·2 × 51·5 × 18·7 *(79·9 × 15·7 × 5·7)*
Main engines: Diesel-electric (ALCO diesels with Westinghouse electric motors); 2 700 bhp; 2 shafts = 13 knots
Complement: 48

Built for Military Sea Transportation Service, Louisiana. Designed for Arctic operation with hull strengthened against ice. C1-M E2-13a type. Launched on 5 August 1957. Note icebreaking bow in photograph. Transferred to Maritime Administration, James River for lay-up on 11 December 1979.

Conversion: Two other ships of this class converted for oceanographic research: *Eltanin*, reclassified from AK 270 to AGOR 8 on 15 November 1962 loaned to Argentina as *Islas Orcadas* (since returned to USN); *Mizar* AK 272 was reclassified AGOR 11 on 15 April 1964 (see AGORs "Eltanin" class).

MIRFAK *USN*

1 "PRIVATE LEONARD C. BROSTROM" CLASS: CARGO SHIP (AK)

Name	*No.*	*Completed*	*F/S*
PVT. LEONARD C. BROSTROM (ex-*Marine Eagle*)	T-AK 255	1943	TPR

Displacement, tons: 8 590 light; 12 056 full load
Dimensions, feet (metres): 520 × 71·5 × 33 *(158·5 × 21·8 × 10·1)*
Main engine: Geared turbine (General Electric); 9 000 shp; 1 shaft = 15·8 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 57 (14 officers, 43 men)

She is fitted with 150 ton capacity booms, providing the most powerful lift capability of any US ship. C4-S-B1 type. Acquired 9 August 1950. Transferred to Maritime Administration, Suisun Bay on 29 May 1980 for lay-up.

PRIVATE LEONARD C. BROSTROM *3/1980, USN (PH2 J. C. Brown)*

1 CONVERTED "VICTORY" CLASS: CARGO SHIP (AK)

Name	*No.*	*Builder*	*Completed*	*F/S*
PVT. JOHN R. TOWLE (ex-SS *Appleton Victory*)	T-AK 240	Oregon SB Corp, Portland, Oreg	23 Mar 1945	TAR

Displacement, tons: 6 700 light; 15 199 full load
Dimensions, feet (metres): 455·5 × 62 × 28·5 *(138·9 × 18·9 × 8·9)*
Main engines: General Electric geared turbines; 8 500 shp; 1 shaft = 17 knots
Boilers: 2 Combustion Engineering
Complement: 49 (14 officers, 35 enlisted men)

Originally built for the American Mail Lines. "Victory" type hull. Acquired on 1 March 1950 by MSC (then MSTS). Three near sisters (AK 280/282) are configured as FBM resupply ships and listed separately. Transferred to the Maritime Administration on 25 August 1980 and laid up at James River. Remains on Navy List.

1 "METEOR" CLASS: VEHICLE CARGO SHIP (AKR)

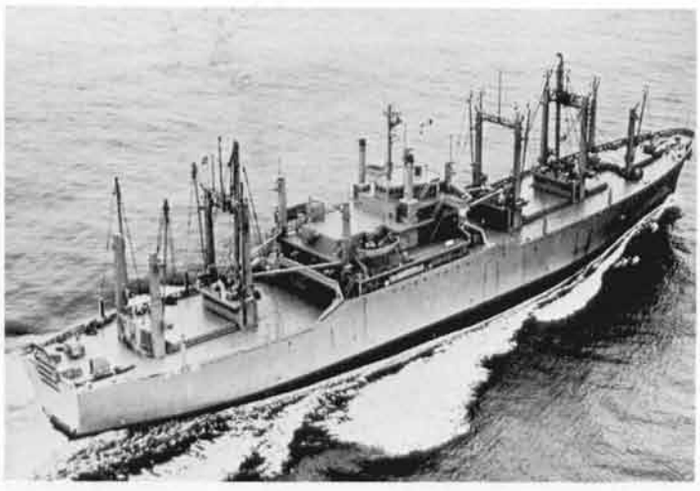
Name	*No.*	*Builders*	*Completed*	*F/S*
METEOR (ex-*Sea Lift*)	T-AKR 9 (ex-LSV 9)	Puget Sound Bridge & D.D. Co	25 Apr 1967	TPA

Displacement, tons: 11 130 light; 16 940 standard; 21 700 full load
Dimensions, feet (metres): 540 × 83 × 27 *(164·7 × 25·3 × 8·2)*
Main engines: Geared turbines; 19 400 shp; 2 shafts = 20 knots
Boilers: 2
Complement: 54
Passengers: 12

Maritime Administration C4-ST-67A type. Roll-on/roll-off vehicle cargo ship. Cost $15 895 500. Authorised under the FY 1963 programme. Laid down on 19 May 1964 and launched on 18 April 1965. Designed for point-to-point sea transportation of Department of Defense self-propelled, fully loaded, wheeled, tracked and amphibious vehicles and general cargo. Internal ramps, stern ramp and side openings provide for quick loading and unloading. Originally authorised as AK-278, changed to LSV on 1 January 1963 and to T-AKR 9 on 1 January 1969.
Assigned to Near-term Rapid Deployment Force 3 April 1980. Returned to general cargo service mid-1981.

Name: Originally named *Sea Lift*. Renamed *Meteor* on 12 September 1975 to avoid confusion with "Sealift" class tankers.

Radar: TM 1650/6X and TM 1660/12S.



METEOR *1980, USN*

RAPID DEPLOYMENT FORCE

In order to protect American interests in the Middle East, the Carter Administration designated a Rapid Deployment Force (RDF) for transporting initial force increments, to be sustained by later "follow-on" increments. In July 1980, a near-term RDF force deployed to the Indian Ocean, made up of two "Maine" class chartered/purchase AKRs, two chartered C-3 cargo vessels, one tanker chartered to serve as a water carrier and one "Sealift" class tanker to provide underway replenishment capability. This force was very soon augmented by a third AKR.
In an effort to meet the requirements for a permanant RDF force, the Department of Defense has developed a three phase programme, to be implemented gradually over a ten year period. The first step is the near-term force, which is already in position at Diego Garcia, the second step is the acquisition and conversion of the seven "SL 7" class containerships to be held in ready-reserve for the "follow-on" increment, and the third step is the construction of eight "AKR 14" class AKRs. All these ships will be manned by civilian crews and "provide a capability to maintain forward deployed combat unit equipment and 30 days supplies for three mechanised (reinforced) Marine Amphibious brigades (MABs) afloat. Three brigades are equivalent to one Marine Amphibious Force (MAF). The interim force carries enough equipment for one brigade. The equipment list is as follows:

51—Tanks	7—8 in Howitzers (SP)	43—81-mm mortars
361—M-60 machine guns	11—155 mm Howitzers	125—LVT
86—TOW missiles	7—155 mm Howitzers (SP)	86—Dragons
16—HAWK missiles	32—105 mm Howitzers	4—175 mm Guns
188—REDEYE missiles	46—60 mm Howitzers (SP)	170—Trucks (or jeeps)
	51—M202 MPFW	

As programmed the Rapid Deployment Force is to be deployed in three stages, which is as follows:

Near-Term RDF	Interim RDF (By FY 1985)	Long-Term RDF
USNS *Meteor* (T-AKR 9)	USNS *Mercury* (T-AKR 10)	8 "AKR 14" class AKRs
USNS *Mercury* (T-AKR 10)	USNS *Jupiter* (T-AKR 11)	8 Converted "SL 7" class—ready reserve
USNS *Jupiter* (T-AKR 11)	Ex-*Tyson Lykes* (T-AKR)	One Oiler (AO)
M/V Lyra (AKR)	Ex-*Charles Lykes* T-AKR)	
SS *American Champion* (T-AK)	8 converted "SL 7" class AKRs—ready reserve	
SS *American Courier* (T-AK)	One Oiler (AO)	
SS *Patriot* (T-AW)		
1 "Sealift" class AOT for underway replenishment capability		

When the last of the "AKR 14" class is completed, the four "Maine" class AKRs will be transferred to general cargo hauling duty with MSC.

2 "C4-S-57a" CLASS: CARGO SHIPS (AK)

Name	*No.*	*Builders*	*Completed*	*F/S*
AMERICAN CHAMPION	T-AK —	Newport News SB & DD Co	1963	RDF
AMERICAN COURIER	T-AK —	Newport News SB & DD Co	1963	RDF

Displacement, tons: 18 654 full load
Measurement, tons: 8 151 gross; 4 769 net
Dimensions, feet (metres): 560·5 × 75 (moulded) × 28·7 *(170·8 × 22·9 × 8·8)*
Main engines: Geared turbines; 16 500 shp; 1 shaft = 20 knots
Boilers: 2
Complement: 56

Built to a merchant C4-S-57a hull design and listed here because they form part of the seven ship Interim Rapid Deployment Force (RDF). They were chartered on 2 June 1980 and transferred to the RDF on 2 June *(Champion)* and 5 June 1980 *(Courier)*. After loading at Wilmington, North Carolina the two ships deployed with the force in July 1980 and are currently stationed in the Indian Ocean. These two vessels are not on the Naval Vessel Register.

AMERICAN COURIER *1980, J. Jedrlinic*

2 + 2 CONVERTED "MAINE" CLASS: VEHICLE CARGO SHIPS (AKR)

Name	*No.*	*Builders*	*Completed*	*F/S*
MERCURY (ex-SS *Illinois*)	T-AKR 10	Bath Iron Works, Bath, Me	1977	TAA
JUPITER (ex-SS *Lipscomb Lykes*, ex-*Arizona*)	T-AKR 11	Bath Iron Works, Bath, Me	14 May 1976	TAA
— (ex-SS *Tyson Lykes*, ex-*Maine*)	T-AKR 12	Bath Iron Works, Bath, Me	27 May 1976	Proj
— (ex-*Charles Lykes*, ex-*Nevada*)	T-AKR 13	Bath Iron Works, Bath, Me	1976	Proj

Displacement, tons: Not available
Measurements, tons: 13 156 gross; 7 603 net; 19 480 deadweight
Dimensions, feet (metres): 684·7 × 102 × 32·2 *(208·7 × 31·1 × 9·8)*
Main engines: Geared turbines (General Electric); 37 000 shp; 2 shafts = 23 knots
Complement: 54

Built to a Maritime Administration C7-S-95a hull design originally for the States Lines (which went bankrupt in 1978). The Lykes company took over all except *Mercury* which as SS *Illinois* reverted to the Bank of Chicago as part of the bankruptcy settlement. *Mercury* was acquired, classified and instated on the Naval Vessel Register on 14 Apr 1980 while *Jupiter* went through the same process on 7 May 1980. *Mercury* was acquired with FY 1981 funds at a cost of $93·1 million while *Jupiter* was acquired with FY 1982 funds at a cost of $93·9 million. AKR 12 is to be acquired in the FY 1983 programme at a cost of $93·9 million. AKR 13 will be acquired in the FY 1984 programme. These four ships will form part of the "Interim Prepositioning Ships" of the RDF. *Mercury* and *Jupiter* are currently serving as part of the Near-term RDF. Little conversion was done to AKR 10 and 11. After loading at Wilmington, North Carolina, they deployed with the other members of the RDF in July 1980. All four have roll-on/roll-off capabilities and two storage decks interconnected by ramps.

0 + 8 CONVERTED "SL 7" CLASS: VEHICLE CARGO SHIPS (AKR)

Name	No.	Builders	Completed	F/S
— (ex-SS *Sea-Land Commerce*)	T-AKR —	A. G. Weser, Bremen, West Germany	30 Mar 1973	Proj
— (ex-SS *Sea-Land Exchange*)	T-AKR —	Rotterdamsche D. D. Maats, NV, Rotterdam	1973	Proj
— (ex-SS *Sea-Land Finance*)	T-AKR —	Rheinstahl Nordseewerke, Emden, West Germany	17 Sep 1973	Proj
— (ex-SS *Sea-Land Galloway*)	T-AKR —	A. G. Weser, Bremen, West Germany	1972	Proj
— (ex-SS *Sea-Land Market*)	T-AKR —	A. G. Weser, Bremen, West Germany	20 Sep 1973	Proj
— (ex-SS *Sea-Land McLean*)	T-AKR —	Rotterdamsche D. D. Maats, NV, Rotterdam	1972	Proj
— (ex-SS *Sea-Land Resource*)	T-AKR —	Rotterdamsche D.D. Maats, NV, Rotterdam	1973	Proj
— (ex-SS *Sea-Land Trade*)	T-AKR —	Rheinstahl Nordseewerke, Emden, West Germany	4 Dec 1973	Proj

Measurement, tons: 41 127 gross; 25 389 net; 27 051-28 095 deadweight
Dimensions, feet (metres): 946·2 × 106 × 34·8 *(288·4 × 32·3 × 10·6)*
Main engines: 2 General Electric MST-19 steam turbines; 120 000 shp; 2 shafts = 33 knots
Boilers: 2 Foster wheeler
Complement: 55

All originally built as container-ships for Sea-Land Services Inc, Port Elizabeth, New Jersey. Because they became uneconomical to operate commercially at today's fuel prices, Sea-Land turned all eight of the class into the Maritime Administration 1979/1980 and all are to be acquired under the FY 1981 programme with the $285 million appropriated "for the charter and/or purchase and conversion of existing ships . . .". It is planned to convert these ships to military use as follows: Two in FY 1982 at the cost of $216·4 million, three in FY 1983 at the cost of $232·3 million and three in the FY 1984 programme. Roll-on/roll-off features will be added, the area between the forward and after superstructures will be built up to the top of the forward superstructure allowing for a helicopter flight deck and an upper and lower hangar. The proposed capacities are as follows (in square feet): upper hangar—32 986; lower hangar—32 986; upper intermediate vehicles—30 670; heavy vehicles (forward)—28 823; lower intermediate vehicles—22 737; small vehicles—18 718; heavy vehicles (aft)— 24 251 and general cargo hold 1 908 for a total storage capacity of 193 079 square feet. All decks are arranged in descending order to the keel except for the heavy vehicles area which is located aft. The general cargo area will be located in the bow. All decks will be joined by at least two ramps except the flight deck, upper hangar and lower hangar which will be connected by two small lifts.

SEA-LAND MARKET *1/1981, Michael D. J. Lennon*

0 + 8 "AKR 14" CLASS: VEHICLE CARGO SHIPS (AKR): PROPOSED

Name	No.	Builders	Completed	F/S
One unit	T-AKR 14	Requested under FY 1982 programme	—	Proj
One unit	T-AKR 15	Proposed under FY 1983 programme	—	Proj
Two units	T-AKR 16/17	Proposed under FY 1984 programme	—	Proj
Two units	T-AKR 18/19	Proposed under FY 1985 programme	—	Proj
Two units	T-AKR 20/21	Proposed under FY 1986 programme	—	Proj

Displacement, tons: 48 600 full load
Measurements, tons: 28 500 deadweight
Dimensions, feet (metres): 826·3 × 105·5 × 30 *(251·9 × 32·2 × 9·1)*
Main engines: Diesels; 27 000 bhp; 2 shafts = 20·4 knots
Complement: 55

To be built to a Maritime Administration C8-M-MA134J hull design. Originally it was planned to build 15 vessels of this class, but with the pending acquisition of the eight "SL 7" Class containerships, the number built was dropped to eight. Funds for the first two units of this class were originally requested in the FY 1981 programme ($207 million), but this was denied by Congress with only $33 million in advance procurement being approved. Construction of the prototype is now requested in the FY 1982 programme at a cost of $242 million.

1 MODIFIED "T6-M-98a" CLASS TANKER: WATER TANKER (AW)

Name	No.	Builder	Completed	F/S
PATRIOT	T-AW —	Todd Shipyards Corp, San Pedro	Dec 1975	RDF

Displacement, tons: 44 503 full load
Measurements, tons: 21 670 gross; 16 420 net; 35 663 deadweight
Dimensions, feet (metres): 711·3 × 84 × 34·5 *(216·8 × 25·6 × 10·5)*
Main engines: Diesels (Fairbanks-Morse); 14 000 bhp; 2 shafts = 16 knots
Complement: 26

Built as a "T6-M-98a" type tanker with 308,277 barrel capacity of oil; or 9 million gallons of water. Chartered by the Military Sealift Command on 2 June 1980 to carry water for the Interim Rapid Deployment Force. She deployed with the other members of the Near-term RDF to the Indian Ocean in July 1980. In late 1980-81 the Zapata Lines Inc. was sold to Ogden Marine Inc., all ships taken over being run by an Ogden subsidiary, Ocean Carriers Inc. NY. In May 1981 name of *Zapata Patriot* changed to *Patriot*.
This vessel is not on the Naval Vessel Register.

End of Rapid Deployment Force (see "Rabenfels" class page 696).

1 "COMET" CLASS: VEHICLE CARGO SHIP (AKR)

Name	No.	Builders	Commissioned	F/S
COMET	T-AKR 7 (ex-T-LSV 7, ex-T-AK 260)	Sun S.B. & D.D. Co, Chester, Penn	27 Jan 1958	TAA

Displacement, tons: 7 605 light; 18 286 full load
Dimensions, feet (metres): 499 × 78 × 28·8 *(152·1 × 23·8 × 8·8)*
Main engines: Geared turbines (General Electric); 13 200 shp; 2 shafts = 18 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 73

Roll-on/roll-off vehicle carrier built for Military Sea Transportation Service C3-ST-14A type. Laid down on 15 May 1956. Launched on 31 July 1957. Maritime Administration Design includes ramp system for loading and discharging. The hull is strengthened against ice. Can accommodate 700 vehicles in two after holds; the forward holds are for general cargo. Equipped with Denny-Brown stabilisers. Reclassified from T-AK to T-LSV on 1 June 1963, and changed to T-AKR on 1 January 1969.

Radar: TM 1650/6X.

COMET *1980, L. and L. van Ginderen*

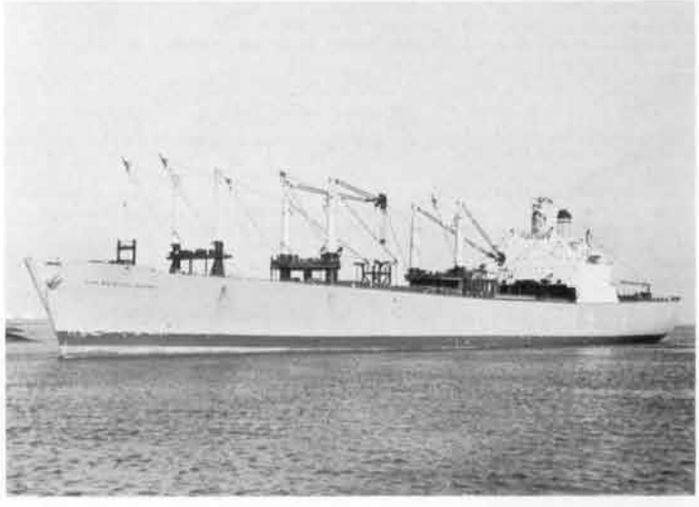
1 "CALLAGHAN" CLASS: VEHICLE CARGO SHIP (AKR)

Name	No.	Builders	Completed	F/S
ADMIRAL WILLIAM M. CALLAGHAN	T-AKR —	Sun S.B. & D.D. Co, Chester, Penn	1968	Active

Displacement, tons: 24 500 full load
Measurement, tons: 21 600 gross; 14 279 dwt
Dimensions, feet (metres): 694 × 92 × 29 *(211·5 × 28 × 8·8)*
Main engines: 2 LM2500 gas turbines (General Electric); 39 000 shp; 2 shafts = 26 knots
Complement: 33

Roll-on/roll-off vehicle cargo ship built specifically for long-term charter to the Military Sealift Command. Launched on 17 October 1967. Internal parking decks and ramps for carrying some 750 vehicles on 165 000 square ft of parking area; unloading via four side ramps and stern ramp, she can off load and reload full vehicle capacity in 27 hours.
This ship is not on the Naval Vessels Register.
Operated by Sun Export, NY. Charter expires 19 December 1981 with an option to renew for six more years.

Engineering: She was the first Navy-sponsored all gas-turbine ship; has similar turbines to those of the "Spruance" class destroyers (DD 963) and "Oliver Hazard Perry" class frigates (FFG 7).



ADMIRAL WILLIAM M. CALLAGHAN *9/1980, L. and L. van Ginderen*

2 "RABENFELS" CLASS: VEHICLE CARGO SHIPS (AKR)

Name	No.	Builders	Completed	FIS
CYGNUS (ex-M/V *Rabenfels*)	T-AKR	Sasebo Heavy Industries Co Ltd, Japan	8 July 1977	Active
LYRA (ex-M/V *Reichenfels*)	T-AKR	Howaldtswerke-Deutsche Werft, Kiel, West Germany	30 Sep 1977	Active

Measurements, tons: *Lyra:* 14 741·9 gross; 7 329·9 net; 15 175 deadweight
Cygnus: 14 189·5 gross; 7 169·7 net; 15 075 deadweight
Dimensions, feet (metres): 633·9 × 88·9 × 29·9 *(193·2 × 27·0 × 9·2)*
Main engines: *Lyra:* two Kawaski/MAN diesels; 18 980 bhp; one shaft = 21 knots
Cygnus: two MAN diesels; 18 990 bhp; one shaft = 21 knots
Complement: 49

Both ships originally built for the Hansa Lines for use in the Far-Eastern trade. When the Hansa Lines went bankrupt, these two ships, plus one other of the four ship class, were picked up by the Lykes Brothers Steamship Co Inc, New Orleans and the above two were in turn chartered to the Military Sealift Command, for five years, on 19 January 1981 at a cost of $135 481 400 for both ships. Both are fully equipped with roll-on/roll-off capabilities. *Cygnus* was the first western ro/ro ship with a heavy slewing stern ramp and a full-scale Jastram Rudder-rotor for slow manoeuvring. Two 1 200 hp bow thrusters are fitted. These vessels are not on the Naval Vessel Register. *Lyra* to near-term RDF in mid-1981.

LYRA (as M/V *Reichenfels*) *1980*

0 + 8 "AO 187" CLASS: OILERS (AO): PROPOSED

Name	No.	Builders	Completed	FIS
—	T-AO 187	Requested under FY 1982 programme	—	Proj
—	T-AO 188/189	Proposed under FY 1984 programme	—	Proj
—	T-AO 190/191	Proposed under FY 1985 programme	—	Proj
—	T-AO 192/193	Proposed under FY 1986 programme	—	Proj
—	T-AO 194	Proposed under FY 1987 programme	—	Proj

Displacement, tons: 26 200
Dimensions, feet (metres): 591 × 88 × — *(180·1 × 26·8 × —)*
Speed, knots: 20
Cargo capacity: 180 000 barrels

The above characteristics are preliminary figures and subject to change. Ships will be civilian manned and operate as part of the Fleet Auxiliary Force. The ships will be a commercially designed variant of the "Cimarron" class AO's and constructed to commercial standards.

AO 187 *1980, USN*

6 "NEOSHO" CLASS: OILERS (AO)

Name	No.	Launched	Commissioned	FIS
NEOSHO	T-AO 143	10 Nov 1953	24 Sep 1954	TAA
MISSISSINEWA	T-AO 144	12 June 1954	18 Jan 1955	TAA
HASSAYAMPA	T-AO 145	12 Sep 1954	19 Apr 1955	TPA
KAWISHIWI	T-AO 146	11 Dec 1954	6 July 1955	TPA
TRUCKEE	T-AO 147	10 Mar 1955	23 Nov 1955	TAA
PONCHATOULA	T-AO 148	9 July 1955	12 Jan 1956	TPA

Displacement, tons: 11 600 light; 38 000 full load
Dimensions, feet (metres): 655 × 86 × 35 *(199·6 × 26·2 × 10·7)*
Main engines: Geared turbines (General Electric); 28 000 shp; 2 shafts = 20 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 324 (21 officers and 303 enlisted men including staff) when navy manned; 200 in MSC

Neosho built by Bethlehem Steel Co, Quincy, Massachusetts; others by New York Shipbuilding Corporation, Camden, New Jersey. These are the largest "straight" fleet oilers (AO) constructed specifically for the Navy. Cargo capacity is approximately 180 000 barrels of liquid fuels.
Two twin 3-in gun mounts removed from *Neosho, Mississinewa,* and *Truckee* and helicopter platform installed. Those ships also have additional superstructure installed forward of after superstructure. All fitted to carry a service force commander and staff (12 officers).
Mississinewa assigned to Military Sealift Command on 15 November 1976; *Neosho* on 25 May 1978, *Hassayampa* on 17 November 1978, *Kawishiwi* on 10 October 1979, *Truckee* on 30 January 1980 and *Ponchatoula* on 1 September 1980. In all cases armament removed.

Radar: RM 1650/12X or TM 1650/6X.

KAWISHIWI *7/1979, Dr. Giorgio Arra*

5 "JUMBOISED MISPILLION" CLASS: OILERS (AO)

Name	No.	Launched	Commissioned	FIS
MISPILLION	T-AO 105	10 Aug 1945	29 Dec 1945	TPA
NAVASOTA	T-AO 106	30 Aug 1945	27 Feb 1946	TPA
PASSUMPSIC	T-AO 107	31 Oct 1945	1 Apr 1946	TPA
PAWCATUCK	T-AO 108	19 Feb 1945	10 May 1946	TAA
WACCAMAW	T-AO 109	30 Mar 1946	25 June 1946	TAA

Displacement, tons: 11 600 light; 34 179 full load (33 750 in T-AO 106 and 109)
Dimensions, feet (metres): 644 × 75 × 35·5 *(196·3 × 22·9 × 10·8)*
Guns: Removed
Main engines: Geared turbines (Westinghouse); 13 500 shp; 2 shafts = 16 knots
Boilers: 4 (Babcock & Wilcox)
Complement: 290 (16 officers, 274 men) when navy manned

All built by Sun Shipbuilding & Dry Dock Co, Chester, Pennsylvania. Originally T3-S2-A3 oilers; converted during mid-1960s under "jumbo" programme. Enlarged mid-sections added to increase cargo capacity to approximately 150 000 barrels. Helicopter platform fitted forward. As "jumboised" these ships had four 3-in single gun mounts; removed in MSC service.
Passumpsic was assigned to the Military Sealift Command on 24 July 1973. *Mispillion* on 26 July 1974, *Waccamaw* on 24 February 1975, *Pawcatuck* on 15 July 1975 and *Navasota* on 13 August 1975. All operate in fleet support with civilian crews and naval detachments.

Radar: TM 1650/6X.

NAVASOTA *3/1979, Dr. Giorgio Arra*

2 "CIMARRON" CLASS: OILERS (AO)

Name	No.	Launched	Commissioned	FIS
MARIAS	T-AO 57	21 Dec 1943	12 Feb 1944	TAA
TALUGA	T-AO 62	10 July 1944	25 Aug 1944	TPA

Displacement, tons: 25 450 full load
Dimensions, feet (metres): 553 × 75 × 33 *(168·6 × 22·9 × 10·1)*
Guns: Unarmed
Main engines: Geared turbines (Bethlehem); 13 500 shp; 2 shafts = 18 knots
Boilers: 4 (Foster-Wheeler)
Complement: 274 (14 officers, 260 enlisted men)

These ships are survivors of a class of 26 of twin-screw (T2) fleet oilers built during World War II; some converted to escort carriers. Three other jumboised versions of this class still exist. Both ships were built by Bethlehem Steel Co, Sparrows Point, Maryland. Original armament consisted of one 5-in gun, four 3-in guns and up to eight 40 mm guns. Cargo capacity 145 000 barrels of liquid fuels.
Marias and *Taluga* were assigned to the Military Sealift Command (MSC) on 2 October 1973 and 4 May 1972 respectively; guns removed. Operate in fleet support.
Were to be reduced to 30-day notice reserve under MSC custody on 3 September 1980—this was revoked and both are still active.

Radar: RM 1650/9X.

MARIAS *10/1976, Michael D. J. Lennon*

4 "COLUMBIA" CLASS: TRANSPORT OILERS (AOT, ex-AO)

Name	No.	Commissioned	FIS
COLUMBIA (ex-*Falcon Lady*)	T-AOT 182	11 Mar 1971	TWWR
NECHES (ex-*Falcon Duchess*)	T-AOT 183	4 Aug 1971	TWWR
HUDSON (ex-*Falcon Princess*)	T-AOT 184	4 May 1972	TWWR
SUSQUEHANNA (ex-*Falcon Countess*)	T-AOT 185	13 Jan 1972	TWWR

Displacement, tonnes: 8 730 light; 46 600 full load
Dimensions, feet (metres): 672 × 89 × 36 *(204·8 × 27·1 × 11)*
Main engines: Two 16-cyl Pielstick diesels; 15 000 bhp = 16·5 knots
Oil fuel, tons: 2 600
Complement: 23 (11 officers, 12 sailors)

Former merchant tankers originally chartered to the Military Sealift Command. All four acquired on bareboat charter on 3 May 1974 (182 and 183), 10 April 1974 (184) and 17 April 1974 (185). Acquired by US Navy for MSC service on 15 January 1976 (182), 11 February 1976 (183), 23 April 1976 (184) and 11 May 1976 (185). Operated under contract by Trinidad Corp. Cargo capacity 310 000 barrels. All reclassified T-AOT on 30 September 1978. All built at Ingalls S.B. Co, Pascagoula

COLUMBIA *7/1979, Michael D. J. Lennon*

9 "SEALIFT" CLASS: TRANSPORT OILERS (AOT, ex-AO)

Name	*No.*	*Builders*	*Commissioned*	*F\S*
SEALIFT PACIFIC	T-AOT 168	Todd Shipyards	14 Aug 1974	TWWR
SEALIFT ARABIAN SEA	T-AOT 169	Todd Shipyards	6 May 1975	TWWR
SEALIFT CHINA SEA	T-AOT 170	Todd Shipyards	9 May 1975	TWWR
SEALIFT INDIAN OCEAN	T-AOT 171	Todd Shipyards	29 Aug 1975	TWWR
SEALIFT ATLANTIC	T-AOT 172	Bath Iron Works, Bath, Maine	26 Aug 1974	TWWR
SEALIFT MEDITERRANEAN	T-AOT 173	Bath Iron Works, Bath, Maine	6 Nov 1974	TWWR
SEALIFT CARIBBEAN	T-AOT 174	Bath Iron Works, Bath, Maine	10 Feb 1975	TWWR
SEALIFT ARCTIC	T-AOT 175	Bath Iron Works, Bath, Maine	22 May 1975	TWWR
SEALIFT ANTARCTIC	T-AOT 176	Bath Iron Works, Bath, Maine	1 Aug 1975	TWWR

Displacement, tons: 34 100 full load
Measurement, tons: 27 500 deadweight
Dimensions, feet (metres): 587 × 84 × 34·6 *(178·9 × 25·6 × 10·6)*
Main engines: Two 14-cyl Pielstick turbo-charged diesels; 19 200 bhp; 1 shaft; (cp propeller) = 16 knots
Range, miles: 12 000 at 16 knots
Complement: 30 + 2 Maritime Academy cadets

Built specially for long term-charter by the Military Sealift Command. T-AO 168 launched on 13 October 1973; others launched in 1974 on 26 January, 20 April, 27 July, 26 January, 9 March, 8 June, 31 August and 26 October respectively. Operated for MSC under charter by Marine Transport Lines Inc. One of this class is always assigned to Interim Rapid Deployment Force to provide an underway replenishment capability.
Fitted with bow thruster to assist docking; automated engine room. Cargo capacity 225 154 barrels. Estimated cost $146·5 million for the nine ship class. All reclassified T-AOT on 30 September 1978.

SEALIFT INDIAN OCEAN *12/1980, Michael D. J. Lennon*

1 "POTOMAC" CLASS: TRANSPORT OILER (AOT, ex-AO)

Name	*No.*	*Acquired*	*F\S*
POTOMAC (ex-*Shenandoah*)	T-AOT 181	12 Jan 1976	TWWR

Measurement, tons: 27 467 deadweight
Dimensions, feet (metres): 620 × 83·5 × 34 *(189 × 25·5 × 10·4)*
Main engine: Geared turbine; 20 460 shp; 1 shaft = 18 knots
Boilers: 2

The merchant tanker *Shenandoah* was built from the stern of the naval tanker *Potomac* (T-AO 150) destroyed by fire on 26 September 1961, and new bow and mid-body sections. After being chartered by the Military Sealift Command since 14 December 1964 the ship was formally acquired on 12 January 1976, assigned the name *Potomac* and placed in MSC service. Cargo capacity 200 000 barrels. Operated under charter by Trinidad Corp. Reclassified T-AOT on 30 September 1978.

Radar: RM 1650/6X and TM 1660/12X.

POTOMAC *3/1979, Michael D. J. Lennon*

1 "AMERICAN EXPLORER" CLASS: TRANSPORT OILER (AOT, ex-AO)

Name	*No.*	*Builders*	*Completed*	*F\S*
AMERICAN EXPLORER	T-AOT 165	Ingalls S.B. Co, Pascagoula	27 Oct 1959	TWWR

Displacement, tons: 8 400 light; 31 300 full load
Measurement, tons: 22 525 deadweight
Dimensions, feet (metres): 615 × 80 × 32 *(187·5 × 24·4 × 9·8)*
Main engines: Steam turbines (De Laval); 22 000 shp; 1 shaft = 20 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 53

T5-S-RM2A type. Laid down on 9 July 1957; launched on 11 April 1958. Built for the Maritime Administration, but acquired by Military Sea Transportation Service. Cargo capacity 190 300 barrels.
Operated for Military Sealift Command under charter by Hudson Waterways Corp. Reclassified T-AOT on 30 September 1978.

AMERICAN EXPLORER *USN*

3 "MAUMEE" CLASS: TRANSPORT OILERS (AOT, ex-AO)

Name	*No.*	*Builders*	*Completed*	*F\S*
MAUMEE	T-AOT 149	Ingalls S.B. Co, Pascagoula	12 Dec 1956	TWWR
SHOSHONE	T-AOT 151	Sun S.B. & D.D. Co, Chester	15 Apr 1957	TWWR
YUKON	T-AOT 152	Ingalls S.B. Co, Pascagoula	17 May 1957	TWWR

Displacement, tons: 7 761 light; 32 953 full load
Measurement, tons: 25 000 deadweight
Dimensions, feet (metres): 620 × 83·5 × 32 *(189 × 25·5 × 9·8)*
Main engine: Geared turbine (Westinghouse); 18 600 shp; 1 shaft = 18 knots
Boilers: 2 (Combustion Engineering)
Complement: 53

Yukon laid down 16 May 1955, launched 16 March 1956; *Maumee* laid down 8 March 1955, launched 16 February 1956; *Shoshone* laid down 15 August 1955, launched 17 January 1957. T5-S-12A type. *Potomac* T-AO 150 sank after explosion in 1961, but was rebuilt in 1963-64; see previous listing for *Potomac* (T-AOT 181). Cargo capacity 203 216 barrels.
Maumee provided with ice-strengthened bow during 1969-70 modification at Norfolk S.B. & D.D. Co; employed in transporting petroleum products to Antarctica in support of US scientific endeavours.
These ships are operated for the Military Sealift Command under charter by Hudson Waterways Corp. Reclassified T-AOT on 30 September 1978.

Radar: TM 1650/6X and TM 1660/12S.

MAUMEE *1978, Michael D. J. Lennon*

1 "MISSION" CLASS: TRANSPORT OILER (AOT, ex-AO)

Name	*No.*	*Builders*	*Completed*	*F\S*
MISSION SANTA YNEZ	T-AOT 134	Marineship Corp, Sausalito, Calif	13 Mar 1944	MPR

Displacement, tons: 5 730 light; 22 380 full load
Dimensions, feet (metres): 524 × 68 × 31 *(159·7 × 20·7 × 9·5)*
Main engines: Turbo-electric (General Electric); 10 000 shp; 1 shaft = 16 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 52

Built to a T2-SE-A2 design. She is the sole survivor of a class of 27 ships (AO 111-137). Acquired from the Naval Overseas Transportation Service on 1 October 1949. Transferred to the Maritime Administration, Suisun Bay on 6 March 1975 for lay-up. Reclassified from AO to T-AOT on 30 September 1978.

5 "SUAMICO" CLASS: TRANSPORT OILERS (AOT, ex-AO)

Name	*No.*	*Builders*	*Commissioned*	*F\S*
TALLULAH (ex-*Valley Forge*)	T-AOT 50	Sun S.B. & D.D. Co, Chester	5 Sep 1942	MAR
CACHE (ex-*Stillwater*)	T-AOT 67	Sun S.B. & D.D. Co, Chester	3 Nov 1942	MAR
MILLICOMA (ex-*Conastoga*, ex-*King's Mountain*)	T-AOT 73	Sun S.B. & D.D. Co, Chester	5 Mar 1943	MAR
SAUGATUCK (ex-*Newton*)	T-AOT 75	Sun S.B. & D.D. Co, Chester	19 Feb 1943	MAR
SCHUYLKILL (ex-*Louisburg*)	T-AOT 76	Sun S.B. & D.D. Co, Chester	9 Apr 1943	MAR

Displacement, tons: 5 252 light; 21 880 full load
Dimensions, feet (metres): 523·5 × 68 × 33 *(159·6 × 20·7 × 10·1)*
Main engines: Turbo-electric drive (GE except Westinghouse in 75); 6 000 shp; 1 shaft = 15 knots
Boilers: 2 (Babcock & Wilcox)
Complement: 52

T2-SE-A1 tankers begun as merchant ships but acquired by Navy and completed as fleet oilers. During the post World War II period, all of these ships were employed in the tanker role, carrying petroleum point-to-point. Launched between June 1942 and March 1943. Cargo capacity approximately 134 000 barrels.
Transferred to Maritime Administration for lay-up at James River—T-AOT 50, 29 May 1975; T-AOT 67, 6 May 1972; T-AOT 73, 16 July 1975; T-AOT 75, 5 November 1974; T-AOT 76, 8 September 1975. All remain on Navy List—replaced by "Sealift" class AOs. Reclassified as T-AOT on 30 September 1978.

SCHUYLKILL *USN*

2 "ALATNA" CLASS: GASOLINE TANKERS (AOG)

Name	No.	Completed	F/S
ALATNA	T-AOG 81	July 1957	PR
CHATTAHOOCHEE	T-AOG 82	Oct 1957	PR

Displacement, tons: 7 300 (81); 5 720 (82) full load
Measurement, tons: 3 659 gross
Dimensions, feet (metres): 302 × 61 × 19 *(92·1 × 18·6 × 5·8)*
Main engines: Turbo-electric; 4 000 bhp; 2 shafts = 13 knots
Complement: 51

Built as T1-MET-24a type gasoline tankers by Bethlehem Steel Co, Staten Island. Bows strengthened for navigation in ice. Equipped with small helicopter deck. *Chattahoochee* transferred to the temporary custody of the Maritime Administration on 8 August 1972 for lay-up at Suisun Bay. *Alatna* followed on 8 August 1972. *Alatna* reacquired by US Navy on 10 May 1979 and *Chattahoochee* on 24 May 1979 for reactivation and operation by MSC. Reactivated and modernised at National Steel and SB Co, San Diego. Started 28 November 1979. Both in service March 1981. Cargo capacity 30 000 barrels.

ALATNA *1978, USN*

3 "TONTI" CLASS: GASOLINE TANKERS (AOG)

Name	No.	Builders	Completed	F/S
RINCON (ex-*Tarland*)	T-AOG 77	Todd Shipyards, Houston	Oct 1945	TPA
NODAWAY (ex-*Belridge*)	T-AOG 78	Todd Shipyards, Houston	Sep 1945	TPA
PETALUMA (ex-*Raccoon Bend*)	T-AOG 79	Todd Shipyards, Houston	Nov 1945	TPA

Displacement, tons: 2 100 light; 6 047 full load
Dimensions, feet (metres): 325·2 × 48·2 × 19·1 *(99·1 × 14·7 × 5·8)*
Main engine: 1 diesel (Nordberg); 1 400 bhp; 1 shaft = 10 knots
Complement: 41

T1-M-BT2 gasoline tankers. Launched as merchant tankers on 5 January 1945, 15 May 1945 and 9 August 1945 respectively. All acquired by Navy 1 July 1950 (77) and 7 September 1950 (78 and 79) and assigned to Military Sea Transportation Service and employed in point-to-point carrying of petroleum. Cargo capacity approximately 30 000 barrels.
These are the only survivors in US service of a once large number of small gasoline tankers. *Rincon* and *Petaluma* are to be replaced by the two "Alatna" class AOGs in 1981 when both will be scrapped. Several survive in foreign navies.

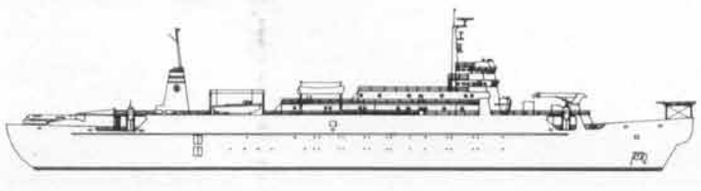
RINCON *USN*

0 + 1 + (1) "ARC 7" CLASS CABLE REPAIRING SHIPS (ARC)

Name	No.	Builders	Completed	F/S
—	T-ARC 7	National Steel and S.B. Co, San Diego	Dec 1982	Bldg

Displacement, tons: 8 370 light; 14 157 full load
Dimensions, feet (metres): 502·5 × 73 × 24 *(153·2 × 22·3 × 7·3)*
Main engines: Diesel-electric; 10 200 shp; 2 shafts = 15 knots
Range: 10 000 at 15 knots
Complement: 108 (75 MSC crew, 6 USN contingent and 27 technicians)

Two ships of this class are to be built as replacement for *Thor* (ARC 4) (since deleted) and *Aeolus* (ARC 3). ARC 7 was authorised in the FY 1979 programme. Estimated construction cost is $175 million. Ordered 16 August 1979. Laid down February 1981 for launch February 1982. Upon completion she will be operated by the Military Sealift Command. Will be fitted with 1 200 hp bow and stern thrusters (two at either end) as well as a remotely manned engineering room controlled from the bridge.
ARC 8 is scheduled for FY 1986 programme.



ARC 7 *1980, A. D. Baker III*

1 "AEOLUS" CLASS: CABLE REPAIRING SHIP (ARC)

Name	No.	Builders	Commissioned
AEOLUS (ex-*Turandot*)	T-ARC 3 (ex-AKA 47)	Walsh-Kaiser Co, Providence, RI	18 June 1945

Displacement, tons: 7 810 full load
Dimensions, feet (metres): 438 × 58·2 × 19·25 *(133·5 × 17·7 × 5·9)*
Main engines: Turbo-electric (Westinghouse); 6 000 shp; 2 shafts = 14 knots
Boilers: 2 (Wickes)
Complement: 221 (23 officers, 198 enlisted men)

Built as S4-SE2-BE1 attack cargo ship. Transferred to Maritime Administration and laid up in reserve from 1946 until reacquired by Navy for conversion to cable repair ship in 1955-56 at the Key Highway Plant of Bethlehem Steel Corp, Baltimore, Maryland, being recommissioned on 14 May 1955. Fitted with cable-laying bow sheaves, cable stowage tanks, cable repair facilities, and helicopter platform aft.
Employed in hydrographic and cable operations. Naval manned until 1973 when transferred to Military Sealift Command and provided with civilian crew. Due to be replaced by ARC 8 in FY 1990.

Radar: TM 1650/6X and TM 1660/12S.

AEOLUS *USN*

2 "NEPTUNE" CLASS: CABLE REPAIRING SHIPS (ARC)

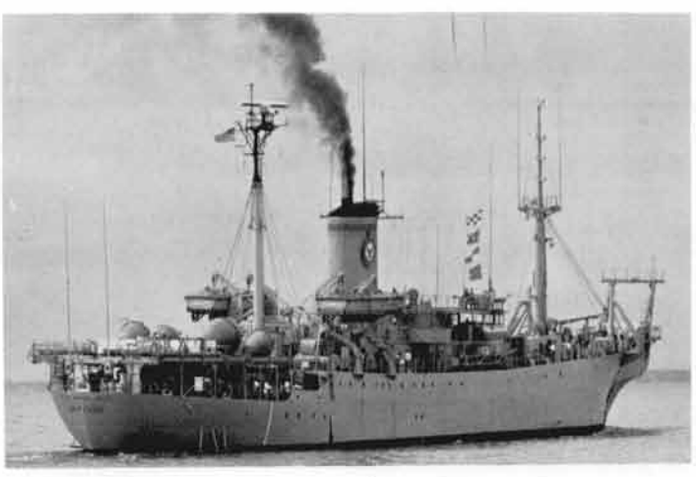
Name	No.	Builders	Commissioned
NEPTUNE (ex-*William H. G. Bullard*)	T-ARC 2	Pusey & Jones Corp, Wilmington, Del	1 June 1953
ALBERT J. MYER	T-ARC 6	Pusey & Jones Corp, Wilmington, Del	13 May 1963

Displacement, tons: 8 500 full load
Dimensions, feet (metres): 369 × 47 × 27 *(112·5 × 14·3 × 8·2)*
Main engines: Diesel-electric (General Electric); 4 000 shp; 2 shafts = 14 knots
Complement: 105

Built as S3-S2-BP1 type cable ships for the Maritime Administration.
Neptune acquired by the Navy from the Maritime Administration in 1953 and sister ship *Albert J. Myer* from US Army on 18 September 1963. They have been fitted with electric cable handling machinery (in place of steam equipment) and precision navigation equipment; helicopter platform in *Neptune*.
Both ships operated by the Military Sealift Command. *Neptune* was naval-manned until 8 November 1973 when transferred to MSC.
The USNS *Neptune* (T-ARC 2) should not be confused with the commercial cable ship *Neptun* of the United States Undersea Cable Corp.

Modernisation: Both *Neptune* and *Albert J. Myer* have been "frammed". *Myer* was rebuilt at Bethlehem Steel Co, Key Highway Division, Baltimore from March 1978 to May 1980. *Neptune* began her modernisation in February 1980 at General Dynamics Co, Quincy, Massachusetts with completion scheduled for February 1982. Modernisation includes stripping the superstructure down to the main deck, gutting the hull, replacing the entire propulsion system, the wiring and piping and replacing the decks and superstructure with aluminium where possible. Characteristics indicated above are for *Albert J. Myer* as rebuilt.

Radar: *Myer* RM 1650/6X.



NEPTUNE *1975, Dr. Giorgio Arra*

7 "POWHATAN" CLASS: FLEET OCEAN TUGS (ATF)

Name	*No.*	*Laid down*	*Completed*	*F/S*
POWHATAN	T-ATF 166	30 Sep 1976	15 June 1979	TAA
NARRAGANSETT	T-ATF 167	5 May 1977	9 Nov 1979	TPA
CATAWBA	T-ATF 168	14 Dec 1977	28 May 1980	TPA
NAVAJO	T-ATF 169	14 Dec 1977	13 June 1980	TPA
MOHAWK	T-ATF 170	22 Mar 1979	16 Oct 1980	TAA
SIOUX	T-ATF 171	22 Mar 1979	May 1981	Active
APACHE	T-ATF 172	22 Mar 1979	June 1981	Active

Displacement, tons: 2 000 full load
Dimensions, feet (metres): 225 × 42 × 15 *(68·6 × 12·8 × 4·6)*
Guns: (see notes)
Main engines: 2 diesels (General Motors); 4 500 bhp; 2 shafts; (cp propellers) = 15 knots
Complement: 24 (20 civilians, 4 naval communications ratings)

A new class of fleet tugs built at Marinette Marine Corp, Wisconsin to commercial standards originally intended as successors to the "Cherokee" and "Abnaki" class ATFs. However, procurement was halted at seven ships with no more planned. All transferred to MSC upon completion. A 300 bhp bow thruster is fitted along with a 10 ton capacity crane and a 53·6 ton bollard pull.

Launch dates: 166, 24 June 1978—167, 28 November 1978—168, 12 May 1979—169, 20 December 1979—170, 5 April 1980—171, 30 October 1980—172, 20 December 1980.

Gunnery: Space provided to fit two 20 mm (single) and two ·5-in machine guns in war. Unarmed during peacetime.

Fiscal: Estimated cost of the lead ship is $11·5 million. ATF 170-172 will cost about $17·2 million each.

POWHATAN *1980, USN*

DEEP SUBMERGENCE VEHICLES

(Included in US Naval Vessel Register)

The US Navy operates several deep submergence vehicles for scientific, military research, and operational military missions. The US Navy acquired its first deep submergence vehicle with the purchase of the bathyscaph *Trieste* in 1958. *Trieste* was designed and constructed by Professor Auguste Piccard. The US Navy sponsored research dives in the Mediterranean Sea with *Trieste* in 1957 after which the bathyscaph was purchased outright and brought to the USA.
Trieste reached a record depth of 35 800 ft *(10 910 m)* in the Challenger Deep off the Marianas on 23 January 1960, being piloted by Lieutenant Don Walsh, USN, and Jacques Piccard (son of Auguste). Rebuilt and designated *Trieste II*, the craft was subsequently used in the search for wreckage of the nuclear-powered submarine *Thresher* (SSN 593) which was lost in 1963 and *Scorpion* (SSN 589) lost in 1968.
After the loss of *Thresher* the US Navy initiated an extensive deep submergence programme that led to construction of two Deep Submergence Rescue Vehicles (DSRV); however, other vehicles proposed in the recommended programme were not built because of a lack of interest, changing operational concepts, and funding limitations.
Several of these deep submergence vehicles and other craft and support ships are operated by Submarine Development Group One at San Diego, California. The Group is a major operational command that includes advanced diving equipment, divers trained in "saturation" techniques; the DSVs *Trieste II, Turtle, Sea Cliff,* DSRV-1, DSRV-2; the submarine *Dolphin* (AGSS 555); several submarine rescue ships.
The hull of the original *Trieste* and Krupp sphere are in the Navy Yard in Washington, DC.

1 NUCLEAR-POWERED RESEARCH VEHICLE: HTV TYPE

Construction of a nuclear-powered hull research vehicle in the early 1980s has been proposed by Admiral H. G. Rickover, Deputy Commander for Nuclear Propulsion, Naval Sea Systems Command. The craft would have a greater depth capability than the NR 1 (described below) and would employ a nuclear plant similar to that of the NR 1. It will be 153 ft long, 14·5 ft diameter and unarmed. "Its purpose will be to verify the feasibility of using HY-130 steel for submarines fabricated on actual shipyard production lines by shipyard production workers under quality control standards representative of the production lines. Since we can't mass-produce submarines in the laboratory under laboratory conditions, we must ensure HY-130 can be welded and handled by the actual workers who will build the submarine.
The introduction of the less advanced HY-80 steel into the fleet in 1958 without a hull test vehicle resulted in severe cracking problems in the shipyard production environment." Navy statements in 1978 included a schedule for construction contract award in early 1980 and completion in 1985, to be built at General Electric, Electric Boat Division. The ship, to cost about $300 million (1980), would be funded fully in the "Research, Development, Test and Evaluation" programme, rather than in "Shipbuilding and Conversion."

1 NUCLEAR-POWERED OCEAN ENGINEERING AND RESEARCH VEHICLE

Name	*Builders*	*F/S*
NR 1	General Dynamics (Electric Boat Div)	ASA

Displacement, tons: 400 submerged
Dimensions, feet (metres): 136·4 × 12·4 × 14·6 *(41·6 × 3·8 × 4·5)*
Reactor: 1 pressurised-water cooled
Machinery: Electric motors; 2 propellers; four ducted thrusters
Complement: 7 (2 officers, 3 enlisted men, 2 scientists)

NR 1 was built primarily to serve as a test platform for a small nuclear propulsion plant; however, the craft additionally provides an advanced deep submergence ocean engineering and research capability.
Laid down on 10 June 1967; launched on 25 January 1969; placed in service 27 October 1969. Commanded by an officer-in-charge vice commanding officer. First nuclear-propelled service craft.

Design: The NR 1 is fitted with wheels beneath the hull to permit "bottom crawling" and she is fitted with external lights, external television cameras, a remote-controlled manipulator, and various recovery devices. No periscopes, but fixed television mast. A surface "mother" ship is required to support her.
Engineering: The NR 1 reactor plant was designed by the Atomic Energy Commission's Knolls Atomic Power Laboratory. She is propelled by two propellers driven by electric motors outside the pressure hull with power provided by a turbine generator within the pressure hull. Four ducted thrusters, two horizontal and two vertical, are provided for precise manoeuvring.

Fiscal: The final estimated ship construction cost at time of launching was $67 million plus $19·9 million for oceanographic equipment and sensors, and $11·8 million for research and development (mainly related to the nuclear propulsion plant), for a total estimated cost of $98·7 million.

NR 1 *1969, General Dynamics, (Electric Boat Division)*

2 DEEP SUBMERGENCE RESCUE VEHICLES

No.	*Builders*	*F/S*
DSRV 1	Lockheed Missiles and Space Co	PSA
DSRV 2	(Sunnyvale, Calif)	ASA

Weight in air, tons: 32
Dimensions, feet (metres): 49·2 × 8 *(15 × 2·4)*
Propulsion: Electric motors, propeller mounted in control shroud and four ducted thrusters
Speed, knots: 5 (maximum)
Endurance: 12 hours at 3 knots
Operating depth, feet (metres): 5 000 *(1 525)*
Complement: 3 (pilot, co-pilot, rescue sphere operator) +24 rescued men

The DSRV is intended to provided a quick-reaction world-wide, all-weather capability for the rescue of survivors in a disabled submarine. The DSRV is transportable by road, aircraft (in C 141 and C 5 jet cargo aircraft), surface ship (on "Pigeon" ASR 21 class submarine rescue ships), and specially modified submarines (SSN type).
The operational effectiveness of the craft is limited severely by the lack of large numbers of ships and submarines that can transport and support the craft. They will be used for the forseeable future for evaluation and research.
The carrying submarine will launch and recover the DSRV while submerged and, if necessary, while under ice. A total of six DSRVs were planned, but only two were funded. DSRV 1 was placed in service 7 August 1971 and DSRV 2 on 7 August 1972. DSRV 1 activated for rescue duty on 4 November 1977 and DSRV 2 on 1 January 1978. They will alternate their duties every two months.

Cost: The construction cost for the DSRV 1 was $41 million and for the DSRV 2 $23 million. The development, construction, test, and support of both vehicles through FY 1975 was $220 million. This expenditure includes the design and construction, research, spares and training.

Design: The DSRV outer hull is constructed of formed fibreglass. Within this outer hull are three interconnected spheres which form the main pressure capsule. Each sphere is 7·5 ft in diameter and is constructed of HY-140 steel. The forward sphere contains the vehicle's control equipment and is manned by the pilot and co-pilot, the centre and after spheres accommodate 24 passengers and a third crewman. Under the DSRVs centre sphere is a hemispherical protrusion or "skirt" which seals over the disabled submarine's hatch. During the mating operation the skirt is pumped dry to enable personnel to transfer.

Electronics: Elaborate search and navigational sonar, and closed-circuit television (supplemented by optical devices) are installed in the DSRV to determine the exact location of a disabled submarine within a given area and for pinpointing the submarine's escape hatches. Side-looking sonar can be fitted for search missions.

Engineering: Propulsion and control of the DSRV are achieved by a stern propeller in a movable control shroud and four ducted thrusters, two forward and two aft. These, plus a mercury trim system, permit the DSRV to manoeuvre and hover with great precision and to mate with submarines lying at angles up to 45 degrees from the horizontal. An elaborate Integrated Control and Display (ICAD) system employs computers to present sensor data to the pilots and transmit their commands to the vehicle's control and propulsion system.

Names: Unofficially named *Avalon* (DSRV 1) and *Mystic* (DSRV 2).

DSRV 2 *1975, USN*

2 DEEP SUBMERGENCE VEHICLES: MODIFIED "ALVIN" TYPE

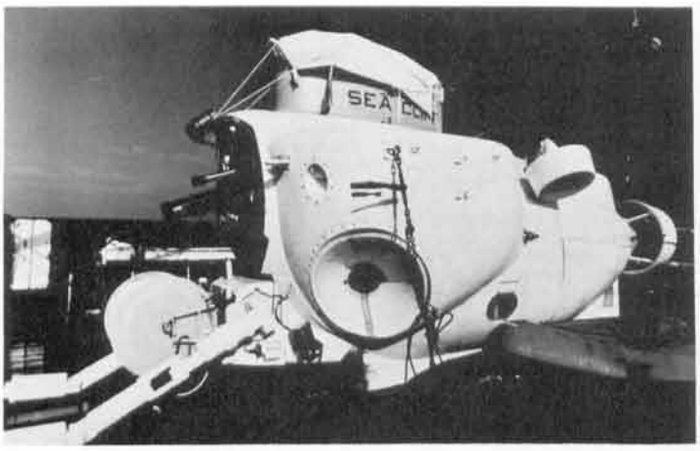
Name	*No.*	*Builders*	*F/S*
TURTLE (ex-*Autec II*)	DSV 3	General Dynamics (Electric Boat Div)	PA
SEA CLIFF (ex-*Autec I*)	DSV 4	General Dynamics (Electric Boat Div)	PSA

Weight, tons: 21
Dimensions, feet (metres): 25 × 8 *(7·6 × 2·4)*
Propulsion: Electric motors, trainable stern propeller; 2 rotating propeller pods
Speed, knots: 2·5
Endurance: 8 hours at 2 knots
Operating depth, feet (metres): 6 500 *(1 980)*
Complement: 2 (pilot, observer)

Intended for deep submergence research and work tasks. Designated *Autec I* and *Autec II* during construction, but assigned above names in dual launching on 11 December 1968.
Designated DSV 4 and DSV 3, respectively, on 1 June 1971 when they were placed in service. DSV 3 placed in commission (miscellaneous) in January 1973 and DSV 4 placed in service (miscellaneous) in the same month.

Construction: Three pressure spheres were fabricated for the *Alvin* submersible programme, one for installation in *Alvin*, a spare, and one for testing. The second and third spheres subsequently were allocated to these later submersibles.
In 1980-81 *Sea Cliff* provided with titanium sphere giving a depth capability of 20 000 ft.

Design: Twin-arm manipulator fitted to each submersible. Propulsion by stem propeller and two smaller, manoeuvring propeller "pods" on sides of vehicles; no thrusters.



SEA CLIFF *4/1976, (JO2 B. Haagenson) USN*

1 DEEP SUBMERGENCE VEHICLE: "ALVIN" TYPE

Name	*No.*	*Builders*	*F/S*
ALVIN	DSV 2	General Mills Inc, Minneapolis, Minn	PSA

Weight, tons: 16
Dimensions, feet (metres): 22·5 × 8·5 *(6·9 × 2·6)*
Propulsion: Electric motors; trainable stern propeller; 2 rotating propeller pods
Speed, knots: 2
Endurance: 8 hours at 1 knot
Operating depth, feet (metres): 12 000 *(3 658)*
Complement: 3 (1 pilot, 2 observers)

Alvin was built for operation by the Woods Hole Oceanographic Institution for the Office of Naval Research. Original configuration had an operating depth of 6 000 ft. Named for Allyn C. Vine of Woods Hole Oceanographic Institution.
Alvin accidentally sank in 5 051 ft of water on 16 October 1968; subsequently raised in August 1969; refurbished 1970-71 in essentially original configuration. Placed in service on Navy List 1 June 1971. Subsequently refitted with titanium pressure sphere to provide increased depth capability and again operational in November 1973.

1 DEEP SUBMERGENCE VEHICLE: "TRIESTE" TYPE

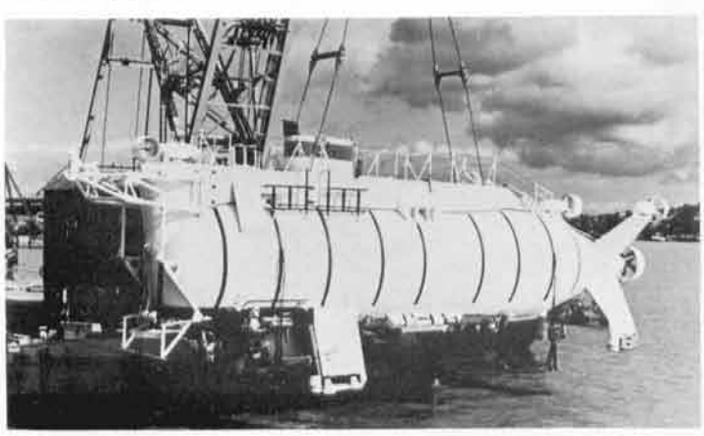
Name	*No.*	*F/S*
TRIESTE II	DSV 1 (ex-X-2)	PSA

Weight, tons: 84
Displacement, tons: 303 dived
Dimensions, feet (metres): 78·6 × 15·3 *(24 × 4·7)*
Propulsion: Electric motors, 3 propellers aft, ducted thruster fwd (see *Design* notes)
Speed, knots: 2
Endurance: 10-12 hours at 2 knots
Operating depth, feet (metres): 12 000 *(3 658)* (see *Design* notes)
Complement: 3 (2 operators, 1 observer)

Trieste II is the successor to *Trieste I* which the US Navy purchased in 1958 from Professor Auguste Piccard. The original *Trieste* was built at Castellammare, Italy; launched on 1 August 1953.
The vehicle is operated by Submarine Development Group One at San Diego, California, and is used primarily as a test bed for underwater equipment and to train deep submergence vehicle operators (hydronauts).
Designated as a "submersible craft" and assigned the designation X-2 on 1 September 1969; subsequently changed to DSV 1 on 1 June 1971. Placed in service, (miscellaneous) January 1973.
Used in location of wreckage of *Scorpion* and *Thresher*.

Design: *Trieste II* is essentially a large float with a small pressure sphere attached to the underside. The float, which is filled with aviation petrol, provides buoyancy. Designed operating depth is 20 000 ft but dives have been limited to approximately 12 000 ft. (The record-setting Challenger Deep dive was made with a Krupp sphere which has a virtually unlimited depth capability).
Trieste II was built at the Mare Island Naval Shipyard in September 1965-August 1966 with a modified float, pressure sphere, propulsion system, and mission equipment being fitted. In the broadside view the sphere is now largely hidden by protective supports to keep the sphere clear of the welldeck when the craft rests in a floating dry dock.
Fitted with external television cameras and mechanical manipulator; computerised digital navigation system installed.

Transfers: The 600 ft capability *Nemo* DSV 5 is on loan to the Southwest Research Institute, San Antonio, Texas, since 1974.



TRIESTE II *11/1979, USN*

COAST GUARD

Senior Officers

Commandant:
Admiral John B. Hayes
Vice Commandant:
Vice-Admiral Robert H. Scarborough
Chief of Staff:
Rear-Admiral Paul A. Yost, Jnr
Commander, Atlantic Area:
Vice-Admiral James S. Gracey
Commander, Pacific Area:
Vice-Admiral James P. Stewart

Establishment

The United States Coast Guard was established by an Act of Congress approved 28 January 1915, which consolidated the Revenue Cutter Service (founded in 1790) and the Life Saving Service (founded in 1848). The act of establishment stated the Coast Guard "shall be a military service and a branch of the armed forces of the USA at all times. The Coast Guard shall be a service in the Treasury Department except when operating as a service in the Navy".
Congress further legislated that in time of national emergency or when the President so directs, the Coast Guard operates as a part of the Navy. The Coast Guard did operate as a part of the Navy during the First and Second World Wars and the Viet-Nam War.
The Lighthouse Service (founded in 1789) was transferred to the Coast Guard on 1 July 1939 and the Bureau of Navigation and Steamboat Inspection on 28 February 1942.
The Coast Guard was transferred to the newly established Department of Transportation on 1 April 1967.

Missions

The current missions of the Coast Guard are to (1) enforce or assist in the enforcement of applicable Federal laws upon the high seas and waters subject to the jurisdiction of the USA including environmental protection; (2) administer all Federal laws regarding safety of life and property on the high seas and on waters subject to the jurisdiction of the USA, except those laws specifically entrusted to other Federal agencies; (3) develop, establish, maintain, operate, and conduct aids to maritime navigation, ocean stations, icebreaking activities, oceanographic research, and rescue facilities; and (4) maintain a state of readiness to function as a specialised service in the Navy when so directed by the President.

Personnel

1 Dec 1980: 4 890 officers, 1 430 warrant officers, 32 129 enlisted men.

Aviation

Only the "Bear" and "Hamilton" class cutters and certain classes of icebreakers can support helicopters at sea.
As of 1 January 1981 the Coast Guard's aviation strength consisted of 44 fixed-wing aircraft and 97 helicopters:

21 HC-130	Hercules
15 HC-131	Convair
6 HU-16	Albatross
1 VC-4A	Gulfstream I
1 VC-11A	Gulfstream II
31 HH-3F	Pelican
66 HH-52A	Sea Guard

The Coast Guard has on order 41 land-based patrol and rescue aircraft in the period 1980-84. The HH-65A helicopters will replace the HH-52A (Sea Guard) and the HU-25A (Falcon 20G) will replace the long-serving HU-16 Albatross amphibians.

Cutter Strength

All Coast Guard vessels are referred to as "cutters". Cutter names are preceded by USCGC. Cutter serial numbers are prefixed with letter designations similar to the US Navy classification system with the prefix letter "W". The first two digits of serial numbers for cutters less than 100 ft in length indicate their approximate length overall. All Coast Guard cutters are active unless otherwise indicated.
Approximately 600 small rescue and utility craft also are in service.

The following table provides a tabulation of the ship strength of the United States Coast Guard. Ship arrangement is based on function and employment. Numbers of ships listed are actual as of 1 March 1981. Some projections of changes are also included.

Category/Classification		*Active*	*Reserve*	*New Construction*
Cutters				
WHEC	High Endurance Cutters	17	1	—
WMEC	Medium Endurance Cutters	24	—	10
Icebreakers				
WAGB	Icebreakers	6	—	—
WTGB	Icebreaking Tugs	6	—	—
Patrol Craft				
WPB	Patrol Craft, Large	79	—	—
Training Cutters				
WIX	Training Cutter	1	—	—
WTR	Reserve Training Cutter	1	—	—
Oceanographic Cutter				
WAGO	Oceanographic Cutter	1	—	—
Buoy Tenders				
WLB	Buoy Tenders, Seagoing	26	2	—
WLM	Buoy Tenders, Coastal	15	—	—
WLI	Buoy Tenders, Inland	13	—	—
WLR	Buoy Tenders, River	22	—	—
Construction Tenders				
WLIC	Construction Tenders, Inland	14	—	—
Lightships				
WLV	Lightships	1	1	—
Harbour Tugs				
WYTM	Harbour Tugs, Medium	10	1	—
WYTL	Harbour Tugs, Small	15	—	—

Shipbuilding Programmes

Approved FY 1981 Programme

1 WMEC ("270 ft" class)
1 WTGB ("140 ft" class)

Requested FY 1982 Programme

3 WMEC ("270 ft" class)

DELETIONS

Icebreaker

1978 9 May *Burton Island* (WAGB 283) (sold)

Medium Endurance Cutters

1980 *Comanche, Modoc* (latter transferred to Maritime Administration for disposal)

Patrol Craft

1978 18 Sep *Flagstaff* (WPGH 1) (pending)

Buoy Tenders

1977 1 June *Oleander* (WLR 73264) (sold); 30 June *Sycamore* (WLR 268) (sold); 1 July *Tern* (WLI 80801) (sold); 8 July *Foxglove* (WLR 285) (sold); 12 Aug *Forsythia* (WLR 63) (sold); 1 Sep *Verbena* (WLI 317) (sold)
1978 31 Oct *Azalea* (WLI 641) (sunk as target by USN), *Juniper* (WLM 224) (sold), *Balsam* (WLB 62) (sold)
1979 *Tupelo* (WLB 303) (sold)

Training Cutter

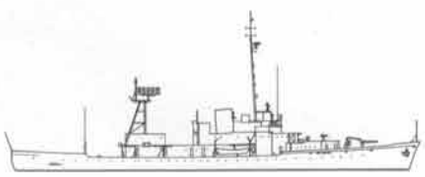
1978 3 Nov *Cuyahoga* (WIX 157) (sunk in collision 20 Oct 1978; raised; scuttled 19 Mar 1979 off Cape Charles as a fishing reef)

Tugboats

1979 15 June *Kaw* (WYTM 61) and *Naugatuck* (WYTM 92) both sold
1980 25 Aug *Messenger* (WYTM 85009) reclassified "boat"

Lightship

1979 13 Dec *Columbia River* (WLV 604) (sold)



"Campbell" Class

"Wind" Class

"Hamilton" Class

POLAR STAR

GLACIER

"Reliance" Class

Scale: 1:1 800

Drawings, A. D. Baker III

HIGH ENDURANCE CUTTERS

12 "HAMILTON" and "HERO" CLASSES: HIGH ENDURANCE CUTTERS (WHEC)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
HAMILTON	WHEC 715	Avondale Shipyards Inc, New Orleans, Louisiana	Jan 1965	18 Dec 1965	20 Feb 1967	AA
DALLAS	WHEC 716	Avondale Shipyards Inc, New Orleans, Louisiana	7 Feb 1966	1 Oct 1966	1 Oct 1967	AA
MELLON	WHEC 717	Avondale Shipyards Inc, New Orleans, Louisiana	25 July 1966	11 Feb 1967	22 Dec 1967	PA
CHASE	WHEC 718	Avondale Shipyards Inc, New Orleans, Louisiana	15 Oct 1966	20 May 1967	1 Mar 1968	AA
BOUTWELL	WHEC 719	Avondale Shipyards Inc, New Orleans, Louisiana	12 Dec 1966	17 June 1967	14 June 1968	PA
SHERMAN	WHEC 720	Avondale Shipyards Inc, New Orleans, Louisiana	13 Feb 1967	23 Sep 1967	23 Aug 1968	PA
GALLATIN	WHEC 721	Avondale Shipyards Inc, New Orleans, Louisiana	17 Apr 1967	18 Nov 1967	20 Dec 1968	AA
MORGENTHAU	WHEC 722	Avondale Shipyards Inc, New Orleans, Louisiana	17 July 1967	10 Feb 1968	14 Feb 1969	PA
RUSH	WHEC 723	Avondale Shipyards Inc, New Orleans, Louisiana	23 Oct 1967	16 Nov 1968	3 July 1969	PA
MUNRO	WHEC 724	Avondale Shipyards Inc, New Orleans, Louisiana	18 Feb 1970	5 Dec 1970	10 Sep 1971	PA
JARVIS	WHEC 725	Avondale Shipyards Inc, New Orleans, Louisiana	9 Sep 1970	24 Apr 1971	30 Dec 1971	PA
MIDGETT	WHEC 726	Avondale Shipyards Inc, New Orleans, Louisiana	5 Apr 1971	4 Sep 1971	17 Mar 1972	PA

Displacement, tons: 3 050 full load
Dimensions, feet (metres): 378 × 42·8 × 20
(115·2 × 13·1 × 6·1)
Guns: 1—5 in *(127 mm)*/38 (Mk 30); 2—20 mm/Mk 16
A/S weapons: 2 triple topedo tubes (Mk 32)
Helicopters: 1 HH-52A or HH-3 helicopter
Main engines: Diesel or gas turbine (CODOG): 2 diesels (Fairbanks-Morse) 7 000 bhp; 2 gas turbines (Pratt & Whitney FT-4A), 36 000 shp; 2 shafts; (cp propellers)
Speed, knots: 29, 20 cruising
Oil fuel: 800 tons
Range, miles: 14 000 at 11 knots (diesels);
2 400 at 29 knots (gas)
Complement: 164 (15 officers, 149 enlisted)

In the autumn of 1977 *Gallatin* and *Morgenthau* were the first of the Coast Guard ships to have women assigned as permanent members of the crew.

Anti-submarine armament: Hedgehog anti-submarine weapons have been removed during overhaul and Mk 309 fire control system for Mk 32 torpedo tubes installed. *Hamilton* was first to be so modernised.

Design: These ships have clipper bows, twin funnels enclosing a helicopter hangar, helicopter platform aft. All are fitted with oceanographic laboratories, elaborate communications equipment, and meteorological data gathering facilities. Superstructure is largely of aluminium construction. Bridge control of manoeuvring is by aircraft-type joy-stick rather than wheel.

Engineering: The "Hamilton" class were the largest US "military" ships with gas turbine propulsion prior to the Navy's "Spruance" class destroyers. The Fairbanks-Morse diesels are 12-cylinder.
Engine and propeller pitch consoles are located in wheelhouse and at bridge wing stations as well as engine room control booth.
A retractable bow propulsion unit is provided for station keeping and precise manoeuvring (unit is located directly forward of bridge, immediately aft of sonar dome).

Gunnery: Mk 56 GFCS and SPG 35 fire control radar.

Radar: Search: SPS 29, SPS 64.

Sonar: SQS 38.

GALLATIN

1978, USCG

MUNRO

1978, USCG

6 "CAMPBELL" (327 ft) CLASS: HIGH ENDURANCE CUTTERS (WHEC)

Name	No.	Builders	Laid down	Launched	Commissioned	FIS
BIBB (ex-*George M. Bibb*)	WHEC 31	Charleston Navy Yard	10 May 1935	14 Jan 1937	10 Mar 1937	AA
CAMPBELL (ex-*George W. Campbell*)	WHEC 32	Philadelphia Navy Yard	1 May 1935	3 June 1936	16 June 1936	PA
DUANE (ex-*William J. Duane*)	WHEC 33	Philadelphia Navy Yard	1 May 1935	3 June 1936	16 Aug 1936	AA
INGHAM (ex-*Samuel D. Ingham*)	WHEC 35	Philadelphia Navy Yard	1 May 1935	3 June 1936	12 Sep 1936	AA
SPENCER (ex-*John C. Spencer*)	WHEC 36	New York Navy Yard	11 Sep 1935	3 Jan 1936	1 Mar 1937	AR
TANEY (ex-*Roger B. Taney*)	WHEC 37	Philadelphia Navy Yard	1 May 1935	3 June 1936	20 Nov 1936	AA

Displacement, tons: 2 216 standard; 2 656 full load
Dimensions, feet (metres): 327 × 41 × 15 *(99·7 × 12·5 × 4·6)*
Guns: 1—5 in *(127 mm)*/38 (Mk 30); 2—20 mm
A/S weapons: Removed
Main engines: Geared turbines (Westinghouse); 6 200 shp; 2 shafts
Boilers: 2 (Babcock & Wilcox)
Speed, knots: 19·8
Range, miles: 4 000 at 19 knots; 8 000 at 10·5 knots
Complement: 144 (13 officers, 131 enlisted men)

These were the Coast Guard's largest cutters until *Hamilton* was completed in 1967.
Duane served as an amphibious force flagship during the invasion of Southern France in August 1944 and was designated AGC 6; the other ships of this class, except the lost *Alexander Hamilton* (PG 34), were similarly employed but retained Coast Guard number with WAGC prefix (amidships structure built up and one or two additional masts installed); all reverted to gunboat configuration after war (WPG). Redesignated WHEC on 1 May 1966.
All of these cutters remain in active service except *Spencer*, decommissioned on 1 February 1974 and placed in reserve at the Coast Guard Yard, Curtis Bay, Maryland. *Spencer* is employed as a stationary engineering school ship.

Anti-submarine armament: During the 1960s these ships each had an ASW armament of one ahead-firing fixed hedgehog and two Mk 32 triple torpedo tube mounts; subsequently removed from all ships.

Gunnery: As built these ships had two 5-in/51 guns (single mounts forward) and two 6 pdr guns; rearmed during World War II with an additional single 5-in/51 gun installed aft plus two or three 3-in/50 anti-aircraft guns, and several 20 mm anti-aircraft guns (depth charge racks installed); *Taney* was experimentally armed with four 5-in/38 guns in single mounts. Present armament fitted after World War II.

Radar: SPS 64.

TANEY *1975, USCG*

INGHAM *6/1980, Dr. Robert L. Scheina*

1 "CASCO" (311 ft) CLASS: HIGH ENDURANCE CUTTER (WHEC)

Name	No.	Builders	Laid down	Launched	Commissioned	FIS
UNIMAK	WHEC 379 (ex-WTR 379, ex-WHEC 379, ex-AVP 31)	Associated Shipbuilders, Seattle, Wash	15 Feb 1942	27 May 1942	31 Dec 1943	AA

Displacement, tons: 1 766 standard; 2 800 full load
Dimensions, feet (metres): 310·75 × 41 × 13·5 *(94·7 × 12·5 × 4·1)*
Guns: 1—5 in *(127 mm)*/38 (Mk 30); 2—40 mm
A/S weapons: Removed
Main engines: Diesels (Fairbanks-Morse); 6 080 bhp; 2 shafts
Speed, knots: 18
Range, miles: 8 000 at 18 knots
Complement: 150 (13 officers; 137 enlisted men)

Unimak is the sole US survivor of 18 former Navy seaplane tenders (AVP) transferred to the Coast Guard in 1946-48 (WAVP/WHEC 370-387). *Unimak* operated as a training cutter (WTR) from 1969 until decommissioned on 30 May 1975 at Baltimore. Replaced by *Reliance* WTR 615. Towed to Boston in January 1977 for reactivation which was delayed by a serious engine-room fire. Recommissioned 15 August 1977 to assist in patrolling the 200 mile EEZ. To remain in commission until the first three or four new 270 ft WMECs are commissioned.

Classification: The former Navy AVPs were designated WAVP by the Coast Guard until changed to high endurance cutters (WHEC) on 1 May 1966. *Unimak* subsequently became a training cutter (WTR) on 28 November 1969. Reclassified WHEC on 15 August 1977.

Transfers: Ships of this class (originally "Barnegat" class) serve in the navies of Ethiopia, Italy, Philippines and Viet-Nam and are used commercially.

UNIMAK *1977, USCG*

MEDIUM ENDURANCE CUTTERS

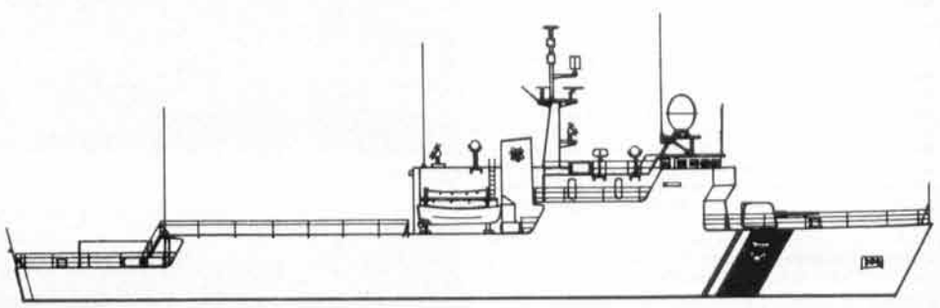
0 + 4 + 6 (6) "BEAR" (270 ft) CLASS: MEDIUM ENDURANCE CUTTERS (WMEC)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*	*F/S*
BEAR	WMEC 901	Tacoma Boatbuilding Co, Tacoma	23 Aug 1979	25 Sep 1980	Aug 1981	Bldg
TAMPA	WMEC 902	Tacoma Boatbuilding Co, Tacoma	3 Apr 1980	7 Jan 1981	Dec 1981	Bldg
HARRIET LANE	WMEC 903	Tacoma Boatbuilding Co, Tacoma	15 Oct 1980	Apr 1981	Apr 1982	Bldg
NORTHLAND	WMEC 904	Tacoma Boatbuilding Co, Tacoma	15 Jan 1981	Aug 1981	Aug 1982	Bldg
SENECA	WMEC 905	Robert E. Derecktor Corp, Middleton, R.I.	—	—	—	Ord
PICKERING	WMEC 906	Robert E. Derecktor Corp, Middleton, R.I.	—	—	—	Ord
ESCANABA	WMEC 907	Robert E. Derecktor Corp, Middleton, R.I.	—	—	—	Ord
LEGARE	WMEC 908	Robert E. Derecktor Corp, Middleton, R.I.	—	—	—	Ord
ARGUS	WMEC 909	Robert E. Derecktor Corp, Middleton, R.I.	—	—	—	Ord
TAHOMA	WMEC 910	Robert E. Derecktor Corp, Middleton, R.I.	—	—	—	Ord
ERIE	WMEC 911	Requested FY 1982 programme	—	—	—	Proj
McCULLOCH	WMEC 912	Requested FY 1982 programme	—	—	—	Proj
EWING	WMEC 913	Requested FY 1982 programme	—	—	—	Proj
Three ships (minimum)	WMEC 914-916	Planned future programmes	—	—	—	Proj

Displacement, tons: 1 780 full load
Dimensions, feet (metres): 270 × 38 × 13·5 *(82·3 × 11·6 × 4·1)*
Aircraft: 1 HH-52A or 1 LAMPS 3 helicopter
Missiles: (see note)
Gun: 1—3 in *(76 mm)*/62 (Mk 75) (see note)
A/S weapons: (see note)
Main engines: Diesels; 7 000 bhp; 2 shafts = 19·5 knots
Range, miles: 6 800 at 13·5 knots
Complement: 95 (13 officers, 82 enlisted men)

The Coast Guard plans to construct up to 25 medium endurance cutters of this class over a seven year period. They will replace the "Campbell" class and other older medium and high endurance cutters when they become operational from about 1981 onwards. The contract for construction of WMEC 905-913 of this class was originally awarded to Tacoma Boatbuilding Co on 29 August 1980. Six of the cutters, WMEC 905-910 had already been approved for construction with WMEC 911-913 approval requested in the FY 1982 programme. However, under threatened lawsuit from the Robert E. Derecktor Corp, Middleton, Rhode Island the contract to Tacoma was withdrawn and awarded to Robert E. Derecktor Corp despite the fact that the yard in Middleton does not exist. Tacoma Boatbuilding Co is now sueing the government over the withdrawal of the contract.
WMEC 901/902 were authorised in the FY 1977 programme, WMEC 903/904 in the FY 1978 programme, WMEC 905/906 in the FY 1979 programme, WMEC 907/909 in the FY 1980 programme and WMEC 910 in the FY 1981 programme.

A/S weapons: These ships will have no shipboard A/S weapons, but will rely on helicopters to deliver torpedoes against submarines detected by the ships' towed sonar array.



"BEAR" Class *1978, A. D. Baker III*

Design: They will be the only medium endurance cutters with helicopter hangars, and the first cutters with automated command and control centre. Fin stabilisers to be fitted.

Electronics: Fitted with Mk 92 weapons control system, easily identified by radome above the bridge. These ships will not have hull-mounted sonar, but instead the tactical Towed Array Sonar System (TASS), capable of providing long-range targeting data for A/S helicopter attack.

Engineering: Diesels were selected over gas turbine propulsion because of the Coast Guard requirement for long on-station time at slow speeds as opposed to high-speed naval operations.

Fiscal: The Coast Guard's FY 1977 programme provided $49 million for the first two ships of this class.

Gunnery: Weight and space for CIWS. Mk 92 FCS to be fitted.

Helicopters: The plans are designed to accommodate the HH-52A Sea Guard helicopter or its Coast Guard successor, or the Navy's planned LAMPS 3 (Light Airborne Multi-Purpose System) helicopter. The helicopter hangar is extendable. Weight and space reserved for helicopter landing and traversing system.

Missiles: Weight and space reserved for Harpoon.

Radar: SPS 64 (V).

Rockets: Mk 36 super RBOC to be fitted.

16 "RELIANCE" (210 ft) CLASS: 15 MEDIUM ENDURANCE CUTTERS (WMEC) and 1 TRAINING CUTTER (WTR)

Name	*No.*	*Builders*	*Commissioned*	*F/S*
RELIANCE	WTR 615	Todd Shipyards	20 June 1964	AA
DILIGENCE	WMEC 616	Todd Shipyards	26 Aug 1964	AA
VIGILANT	WMEC 617	Todd Shipyards	3 Oct 1964	AA
ACTIVE	WMEC 618	Christy Corp	17 Sep 1966	AA
CONFIDENCE	WMEC 619	Coast Guard Yard, Curtis Bay, Baltimore	19 Feb 1966	PA
RESOLUTE	WMEC 620	American Shipbuilding Co	8 Dec 1966	PA
VALIANT	WMEC 621	American Shipbuilding Co	28 Oct 1967	PA
COURAGEOUS	WMEC 622	American Shipbuilding Co	10 Apr 1968	PA
STEADFAST	WMEC 623	American Shipbuilding Co	25 Sep 1968	AA
DAUNTLESS	WMEC 624	American Shipbuilding Co	10 June 1968	AA
VENTUROUS	WMEC 625	Coast Guard Yard, Curtis Bay, Baltimore	16 Aug 1968	PA
DEPENDABLE	WMEC 626	American Shipbuilding Co	22 Nov 1968	AA
VIGOROUS	WMEC 627	American Shipbuilding Co	2 May 1969	AA
DURABLE	WMEC 628	Coast Guard Yard, Curtis Bay, Baltimore	8 Dec 1967	PA
DECISIVE	WMEC 629	Coast Guard Yard, Curtis Bay, Baltimore	23 Aug 1968	AA
ALERT	WMEC 630	American Shipbuilding Co	4 Aug 1969	AA

Displacement, tons: 950 standard; 1 007 full load (except WTR and WMEC 616-619, 970 full load)
Dimensions, feet (metres): 210·5 × 34 × 10·5 *(64·2 × 10·4 × 3·2)*
Aircraft: 1 HH-52A helicopter embarked as required
Gun: 1—3 in *(76 mm)*/50
Main engines: 2 turbo-charged diesels (ALCO 251B); 2 shafts; 5 000 bhp = 16 knots
Range, miles: 6 100 at 13 knots (615-619); 6 100 at 14 knots (remainder); 2 700 at 16 knots (all)
Complement: 61 (7 officers, 54 enlisted men)

Designed for search and rescue duties. Design features include 360 degree visibility from bridge; helicopter flight deck (no hangar); and engine exhaust vent at stern in place of conventional funnel. Capable of towing ships up to 10 000 tons. Air-conditioned throughout except engine room; high degree of habitability.
Launched, respectively, on the following dates: 25 May 1963, 20 July 1963, 24 December 1963, 21 July 1965, 8 May 1965, 30 April 1966, 14 January 1967, 18 March 1967, 24 June 1967, 21 October 1967, 11 November 1967, 16 March 1968, 4 May 1968, 29 April 1967, 14 December 1967, 19 October 1968.
All these cutters are active. *Reliance* is the Coast Guard's reserve training cutter based at Yorktown, Virginia, and retains full search, rescue, and patrol capabilities.

Designation: These ships were originally designated as patrol craft (WPC); changed to WMEC on 1 May 1966.

Helicopters: *Alert* was the first US ship fitted with the Canadian-developed "Beartrap" helicopter hauldown system. This experimental fit now removed. No further procurement of this system has been funded.

Radar: SPS 64.

COURAGEOUS *6/1980, Dr. Robert L. Scheina*

ICEBREAKERS

2 "POLAR STAR" CLASS: ICEBREAKERS (WAGB)

Name	No.	Builders	Commissioned	F/S
POLAR STAR	WAGB 10	Lockheed Shipbuilding Co, Seattle, Washington	19 Jan 1976	PA
POLAR SEA	WAGB 11	Lockheed Shipbuilding Co, Seattle, Washington	23 Feb 1978	PA

Displacement, tons: 12 087 full load
Dimensions, feet (metres): 399 × 86 × 31 *(121·6 × 26·2 × 9·5)*
Aircraft: 2 HH-52A helicopters
Main engines: Diesel-electric; 6 ALCO diesels; 18 000 shp; 3 gas turbines (Pratt & Whitney FT4A-12); 60 000 shp; 3 shafts; (cp propellers) 18 knots
Range, miles: 28 000 at 13 knots
Complement: 163 (13 officers, 125 enlisted men plus 10 scientists and 15 flight crew)

These ships are the first icebreakers built for US service since *Glacier* was constructed two decades earlier. The programme is intended to replace the World War II-built "Wind" class icebreakers. *Polar Star* authorised in the Fiscal Year 1971 budget of the Department of Transportation. *Polar Sea* in the FY 1973 budget. *Polar Star* was laid down on 15 May 1972 and launched on 17 November 1973. *Polar Sea* was laid down on 27 November 1973 and launched on 24 June 1975. No additional ships are planned for the near future. *Polar Star* based at Seattle.

Design: The "Polar Star" class icebreakers are the largest ships operated by the US Coast Guard. At a continuous speed of 3 knots these ships can break ice 6 ft thick and by riding on the ice they can break 21 ft pack.
These ships have a conventional icebreaker hull form with cutaway bow configuration and well rounded body sections to prevent being trapped in ice. Two 15 ton capacity cranes fitted aft; hangar and flight deck aft; extensive research laboratories provided for arctic and oceanographic research.

Engineering: This CODOG design provides for conventional diesel engines for normal cruising in field ice and gas turbines for heavy icebreaking. The diesel engines drive generators producing AC power; the main propulsion DC motors draw power through rectifiers permitting absolute flexibility in the delivery of power from alternate sources. The use of cp propellers on three shafts will permit manoeuvring in heavy ice without the risk to the propeller blades caused by stopping the shaft while going from ahead to astern.
The Coast Guard had given consideration to the use of nuclear power for an icebreaker however, at this time the gas turbine-diesel combination can achieve the desirable power requirements without the added cost and operating restrictions of a nuclear powerplant. From January 1976 until November 1977 (her first deployment) *Polar Star* had serious engineering problems which resulted in her being alongside for most of that period.

Radar: SPS 64.

POLAR SEA *1979, L. and L. van Ginderen*

1 "GLACIER" CLASS: ICEBREAKER (WAGB)

Name	No.	Builders	USN Commissioned	F/S
GLACIER	WAGB 4 (ex-AGB 4)	Ingalls Shipbuilding Corp, Pascagoula, Mississippi	27 May 1955	PA

Displacement, tons: 8 449 full load
Dimensions, feet (metres): 309·6 × 74 × 29 *(94·4 × 22·6 × 8·8)*
Aircraft: 2 helicopters normally embarked
Main engines: Diesel-electric (10 Fairbanks-Morse diesels and 2 Westinghouse electric motors); 21 000 hp; 2 shafts = 17·6 knots
Range, miles: 29 200 at 12 knots; 12 000 at 17·6 knots
Complement: 241 (15 officers, 226 enlisted men)

The largest icebreaker in US service prior to the "Polar Star" class; laid down on 3 August 1953 and launched on 27 August 1954. Transferred from Navy (AGB 4) to Coast Guard on 30 June 1966. During 1972 *Glacier* and assigned helicopters were painted red to improve visibility in Arctic regions. All other icebreakers except *Mackinaw* painted red during 1973.

Engineering: When built *Glacier* had the largest capacity single-armature DC motors ever built and installed in a ship.

Gunnery: As built *Glacier* was armed with two 5-in guns (twin), six 3-in guns (twin), and four 20 mm guns; lighter weapons removed prior to transfer to Coast Guard; 5-in guns removed in 1969.

Radar: SPS 64.

GLACIER *1976, John A. Jedrlinic*

2 "WIND" CLASS: ICEBREAKERS (WAGB)

Name	No.	Builders	Launched	F/S
WESTWIND	WAGB 281 (ex-AGB 6)	Western Pipe & Steel Co, San Pedro, California	31 Mar 1943	GLA
NORTHWIND	WAGB 282	Western Pipe & Steel Co, San Pedro, California	25 Feb 1945	AA

Displacement, tons: 3 500 standard; 6 515 full load
Dimensions, feet (metres): 269 × 63·5 × 29 *(82 × 19·4 × 8·8)*
Aircraft: 2 helicopters normally embarked (HH-52A)
Main engines: Diesel-electric; 4 diesels (Enterprise); 10 000 bhp; 2 shafts = 16 knots
Range, miles: 38 000 at 10·5 knots; 16 000 at 16 knots
Complement: 135

Originally seven ships in this class built. Five ships were delivered to the US Coast Guard during World War II and two to the US Navy in 1946. *Westwind* served in the Soviet Navy from 1945 to 1951 (named *Severni Polus* in Soviet service) and with *Northwind* are last of the class. *Westwind* operates on the Great Lakes. Crews of *Northwind* and *Westwind* reduced from 181 to approximately 135 during 1975.

Engineering: These ships were built with a bow propeller shaft in addition to the two stern shafts; bow shaft removed from all units because it would continually break in heavy ice. *Westwind* re-engined in 1973-74, and *Northwind* in 1974-75.

Radar: SPS 64.

WESTWIND *3/1979, L. and L. van Ginderen*

1 "MACKINAW" CLASS: ICEBREAKER (WAGB)

Name	No.	Builders	Commissioned	F/S
MACKINAW (ex-*Manitowac*)	WAGB 83	Toledo Shipbuilding Co, Ohio	20 Dec 1944	GLA

Displacement, tons: 5 252
Dimensions, feet (metres): 290 × 74 × 19 *(88·4 × 22·6 × 5·8)*
Aircraft: 1 helicopter
Main engines: 2 diesels (Fairbanks-Morse); with electric drive (Elliot); 3 shafts (1 fwd, 2 aft); 10 000 bhp = 18·7 knots
Range, miles: 60 000 at 12 knots; 10 000 at 18·7 knots
Complement: 127 (10 officers, 117 enlisted men)

Laid down on 20 March 1943, launched 6 March 1944. Specially designed and constructed for service as icebreaker on the Great Lakes. Equipped with two 12 ton capacity cranes. Clear area for helicopter is provided on the quarterdeck.

Radar: SPS 64.

MACKINAW *1978, USCG*

1 "STORIS" CLASS: MEDIUM ENDURANCE CUTTER (WMEC)

Name	No.	Builders	Commissioned	F/S
STORIS (ex-*Eskimo*)	WMEC 38 (ex-WAGB 38, ex-WAGL 38)	Toledo Shipbuilding Co, Ohio	30 Sep 1942	PA

Displacement, tons: 1 715 standard; 1 925 full load
Dimensions, feet (metres): 230 × 43 × 15 *(70·1 × 13·1 × 4·6)*
Gun: 1—3 in/50 Mk 22
Main engines: Diesel-electric; 1 shaft; 3 000 bhp = 14 knots
Range, miles: 22 000 at 8 knots; 12 000 at 14 knots
Complement: 106 (10 officers, 96 enlisted men)

Laid down on 14 July 1941; launched on 4 April 1942 as ice patrol tender. Strengthened for ice navigation and sometimes employed as icebreaker. Employed in Alaskan service for search, rescue and law enforcement.
Designation changed from WAGL to WAGB on 1 May 1966; redesignated as medium endurance cutter (WMEC) on 1 July 1972.

Radar: SPS 64.

STORIS *1975, USCG*

6 + 1 "KATMAI BAY" (140 ft) CLASS: ICEBREAKING TUGS (WTGB)

Name	No.	Laid down	Commissioned	F/S
KATMAI BAY	WTGB 101	7 Nov 1977	8 Jan 1979	GLA
BRISTOL BAY	WTGB 102	13 Feb 1978	5 Apr 1979	GLA
MOBILE BAY	WTGB 103	13 Feb 1978	6 May 1979	GLA
BISCAYNE BAY	WTGB 104	29 Aug 1978	8 Dec 1979	GLA
NEAH BAY	WTGB 105	6 Aug 1979	18 Aug 1980	GLA
MORRO BAY	WTGB 106	6 Aug 1979	25 Jan 1981	Active
PENOBSCOT BAY	WTGB 107	—	—	Proj

Displacement, tons: 662 full load
Dimensions, feet (metres): 140 × 37·6 × 12·5 *(42·7 × 11·4 × 3·8)*
Main engines: Diesel-electric; 2 500 bhp; 1 shaft = 14·7 knots
Endurance: 14 days
Complement: 17 (3 officers, 14 enlisted men)

This class is designed to replace the "110 ft" class WYTMs. Originally classified as WYTMs. Reclassified WTGBs on 5 February 1979. The size, manoeuvrability and other operational characteristics of these new vessels are tailored for operations in harbours and other restricted waters and for fulfilling present and anticipated multi-mission requirements. All units are ice strengthened for operation on the Great Lakes, coastal waters and in rivers. WTGB 101 authorised in the FY 1976 programme, WTGB 102-104 in the FY 1977 programme, WTGB 105-106 in the FY 1978 programme, WTGB 107 approved FY 1981 programme. First six built at Tacoma Boatbuilding Co, Tacoma.

Radar: SPS 64.

KATMAI BAY *1/1979, USCG*

PATROL CRAFT

26 "CAPE" CLASS: PATROL CRAFT—LARGE (WPB)

Name	No.	Builders	F/S
"A" Series			
CAPE SMALL	95300	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE CORAL	95301	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE HIGGON*	95302	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE UPRIGHT*	95303	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE GULL*	95304	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE HATTERAS*	95305	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE GEORGE*	95306	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE CURRENT*	95307	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE STRAIT	95308	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE CARTER	95309	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE WASH	95310	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE HEDGE	95311	Coast Guard Yard, Curtis Bay, Maryland	PA
"B" Series			
CAPE KNOX*	95312	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE MORGAN*	95313	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE FAIRWEATHER	95314	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE FOX*	95316	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE JELLISON	95317	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE NEWAGEN	95318	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE ROMAIN	95319	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE STARR	95320	Coast Guard Yard, Curtis Bay, Maryland	AA
"C" Series			
CAPE CROSS	95321	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE HORN	95322	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE SHOALWATER*	95324	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE CORWIN	95326	Coast Guard Yard, Curtis Bay, Maryland	PA
CAPE HENLOPEN*	95328	Coast Guard Yard, Curtis Bay, Maryland	AA
CAPE YORK	95332	Coast Guard Yard, Curtis Bay, Maryland	AA

* Modernised (see note)

Displacement, tons: 95 standard; 105 full load
Dimensions, feet (metres): 95 × 20 × 6 *(29 × 6·1 × 1·8)*
Guns: 2—5 MGs
Main engines: 4 diesels (Cummings; General Motors in modernised ships); 2 324 bhp; 2 shafts = 20 knots (21 knots, "C" series)
Range, miles: 2 600 ("A" series); 3 000 ("B" series); 2 800 ("C" series); all at 9 knots (economical); 460 at 20 knots ("C" series 500 at 21 knots)
Complement: 14 (1 officer, 13 enlisted personnel)

Designed for port security, search, and rescue. Steel hulled. "A" series built in 1953; "B" series in 1955-56, and "C" series in 1958-59.
Plans to dispose of this class from 1974-75 onward in favour of new WPB construction have been cancelled; instead all remaining craft will be modernised (see below). Some ships carry women as officers or enlisted personnel as part of the crew. Eight "Cape" class cutters serve in the South Korean Navy.
Cape Higgon, Hatteras, Upright and *Gull* paid-off in December 1972, reinstated in 1979-81 after reconstruction.

Modernisation: All craft are being modernised to extend their service life for an estimated ten years. Cost in 1976 was estimated at $500 000 per cutter and by FY 1980 $2 million per cutter. They will receive new engines, electronics, and deck equipment; superstructure being modified or replaced; and habitability improved. The programme began in July 1977. Each craft takes eight months to modernise.

Radar: SPS 64.

CAPE FAIRWEATHER *7/1976, A. D. Baker III*

CAPE YORK *6/1980, Dr. Robert L. Scheina*

53 "POINT" CLASS: PATROL CRAFT—LARGE (WPB)

Name	No.	Builders	F/S
"A" Series			
POINT HOPE	82302	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT VERDE	82311	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT SWIFT	82312	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT THATCHER	82314	Coast Guard Yard, Curtis Bay, Maryland	AA
"C" Series			
POINT HERRON	82318	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT ROBERTS	82332	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT HIGHLAND	82333	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT LEDGE	82334	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT COUNTESS	82335	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT GLASS	82336	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT DIVIDE	82337	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT BRIDGE	82338	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT CHICO	82339	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT BATAN	82340	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT LOOKOUT	82341	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT BAKER	82342	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT WELLS	82343	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT ESTERO	82344	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT JUDITH	82345	Martinac S.B., Tacoma, Washington	PA
POINT ARENA	82346	Martinac S.B., Tacoma, Washington	AA
POINT BONITA	82347	Martinac S.B., Tacoma, Washington	AA
POINT BARROW	82348	Martinac S.B., Tacoma, Washington	PA
POINT SPENCER	82349	Martinac S.B., Tacoma, Washington	AA
POINT FRANKLIN	82350	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT BENNETT	82351	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT SAL	82352	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT MONROE	82353	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT EVANS	82354	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT HANNON	82355	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT FRANCIS	82356	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT HURON	82357	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT STUART	82358	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT STEELE	82359	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT WINSLOW	82360	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT CHARLES	82361	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT BROWN	82362	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT NOWELL	82363	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT WHITEHORN	82364	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT TURNER	82365	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT LOBOS	82366	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT KNOLL	82367	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT WARDE	82368	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT HEYER	82369	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT RICHMOND	82370	Coast Guard Yard, Curtis Bay, Maryland	AA
"D" Series			
POINT BARNES	82371	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT BROWER	82372	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT CAMDEN	82373	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT CARREW	82374	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT DORAN	82375	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT HARRIS	82376	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT HOBART	82377	Coast Guard Yard, Curtis Bay, Maryland	PA
POINT JACKSON	82378	Coast Guard Yard, Curtis Bay, Maryland	AA
POINT MARTIN	82379	Coast Guard Yard, Curtis Bay, Maryland	AA

Displacement, tons: "A" series 67, "C" series 66; "D" series 69
Dimensions, feet (metres): 83 × 17·2 × 5·8 *(25·3 × 5·2 × 1·8)*
Guns: 1—5 MG or 2—5 MGs; some boats unarmed
Main engines: 2 diesels; 1 600 bhp; 2 shafts = 23·5 knots except "D" series 22·6 knots
Range, miles: 1 500 at 8 knots (1 200 "D" series)
Complement: 8 (1 officer, 7 enlisted personnel) (see notes)

Designed for search, rescue, and patrol. Of survivors, "A" series built 1960-61; "C" series in 1961-67; and "D" series in 1970.
26 cutters of the "A" and "B" series were transferred to South Viet-Nam in 1969-70.

Personnel: Most of these craft now have an officer assigned; a few still operate with an all-enlisted crew. Some carry women as officers or enlisted personnel.

Radar: SPS 64.

POINT BARROW *8/1980, L. and L. van Ginderen*

SEAGOING TENDERS

Note: *Acushnet* WMEC 167 serves as Oceanographic cutter with *Evergreen* WAGO 295 from class below. *Acushnet* operates from Gulfport, Miss and *Evergreen* from New London, Conn.

31 "BALSAM" CLASS: BUOY TENDERS (SEAGOING) (WLB)/ OCEANOGRAPHIC CUTTER (WAGO)/ MEDIUM ENDURANCE CUTTERS (WMEC)

Name	No.	Launched	F/S	Name	No.	Launched	F/S
LAUREL	WLB 291	1942	PA	**BLACKTHORN**	WLB 391	1944	AR
CLOVER	WMEC 292	1942	PA	**BRAMBLE***	WLB 392	1944	GLA
EVERGREEN	WAGO 295	1943	AA	**FIREBUSH**	WLB 393	1944	PA
SORREL*	WLB 296	1943	AR	**HORNBEAM**	WLB 394	1944	AA
IRONWOOD	WLB 297	1944	PA	**IRIS**	WLB 395	1944	PA
CITRUS*	WMEC 300	1943	PA	**MALLOW**	WLB 396	1944	PA
CONIFER	WLB 301	1943	AA	**MARIPOSA**	WLB 397	1944	GLA
MADRONA	WLB 302	1943	AA	**SAGEBRUSH**	WLB 399	1944	AA
MESQUITE	WLB 305	1943	GLA	**SALVIA**	WLB 400	1944	AA
BUTTONWOOD	WLB 306	1943	AA	**SASSAFRAS**	WLB 401	1944	AA
PLANETREE	WLB 307	1943	PA	**SEDGE***	WLB 402	1944	PA
PAPAW	WLB 308	1943	AA	**SPAR***	WLB 403	1944	AA
SWEETGUM	WLB 309	1943	AA	**SUNDEW***	WLB 404	1944	AA
BASSWOOD	WLB 388	1944	PA	**SWEETBRIER**	WLB 405	1944	PA
BITTERSWEET	WLB 389	1944	AA	**WOODRUSH**	WLB 407	1944	PA
BLACTHAW*	WLB 390	1944	PA				

Displacement, tons: 935 standard; 1 025 full load
Dimensions, feet (metres): 180 × 37 × 13 *(54·9 × 11·3 × 4)*
Guns: 2—20 mm guns in *Ironwood*, *Bittersweet*, *Firebush*, *Sedge* and *Sweetbrier*; rest unarmed
Main engines: Diesel-electric; 1 000 bhp in tenders numbered up to WLB 302, except *Ironwood*, 1 shaft = 12·8 knots; others 1 200 bhp; 1 shaft = 15 knots
Complement: 53 (6 officers, 47 enlisted men)

Seagoing buoy tenders. *Ironwood* built by Coast Guard Yard at Curtis Bay, Maryland; others by Marine Iron & Shipbuilding Co, Duluth, Minnesota, or Zeneth Dredge Co, Duluth, Minnesota. Completed 1943-45. Seven ships indicated by asterisks are strengthened for icebreaking. All WLBs have 20 ton capacity booms. *Evergreen* has been refitted as an oceanographic cutter (WAGO) and is painted white.
Citrus reclassified WMEC in place of *Modoc* (WMEC 194) in June 1979 and *Clover* in place of *Comanche* (WMEC 20) in February 1980.
On 28 January 1980 *Blackthorn* was sunk in collision in Tampa Bay, subsequently salvaged and currently paid off to inactive reserve (9 April 1980) pending decision on her future.

Modernisation: All of this class have completed modernisation. This has involved a rebuilding of the main engines and overhaul of the propulsion motors, improvement of habitability, installation of hydraulic cargo-handling equipment and the addition of a bow thruster.

Radar: SPS 64.

MADRONA *6/1979, Dr. Robert Scheina*

COASTAL TENDERS

5 "RED" CLASS: BUOY-TENDERS COASTAL (WLM)

Name	No.	Launched	F/S	Name	No.	Launched	F/S
RED WOOD	WLM 685	1965	AA	**RED CEDAR**	WLM 688	1971	AA
RED BEECH	WLM 686	1965	AA	**RED OAK**	WLM 689	1972	AA
RED BIRCH	WLM 687	1966	AA				

Displacement, tons: 471 standard; 512 full load
Dimensions, feet (metres): 157 × 33 × 6 *(47·9 × 10·1 × 1·8)*
Main engines: 2 diesels; 2 shafts; 1 800 hp = 12·8 knots
Range, miles: 3 000 at 11·6 knots
Complement: 31 (4 officers, 27 enlisted men)

All built by Coast Guard Yard, Curtis Bay, Maryland. WLM 685-7 completed 1965-66 and other pair 1971-72. Fitted with cp propellers and bow thrusters; steel hulls strengthened for light icebreaking. Steering and engine controls on each bridge wing as well as in pilot house. Living spaces are air conditioned. Fitted with 10 ton capacity boom.

RED CEDAR *1976, Dr. Giorgio Arra*

3 "HOLLYHOCK" CLASS: BUOY-TENDERS COASTAL (WLM)

Name	*No.*	*F/S*
FIR	WLM 212	PA
HOLLYHOCK	WLM 220	AA
WALNUT	WLM 252	PA

Displacement, tons: 989
Dimensions, feet (metres): 175 × 34 × 12 *(53·4 × 10·4 × 3·7)*
Main engines: 2 diesels; 2 shafts; 1 350 bhp = 12 knots
Complement: 40 (5 officers, 35 enlisted men)

Launched in 1937 *(Hollyhock)* and 1939 *(Fir* and *Walnut)*. *Walnut* was re-engined by Willamette Iron & Steel Co, Portland, Oregon, in 1958. Redesignated coastal tenders, (WLM), instead of buoy tenders, (WAGL) on 1 January 1965. Fitted with 20 ton capacity boom.

FIR *1977, USCG*

7 "WHITE SUMAC" CLASS: BUOY-TENDERS COASTAL (WLM)

Name	*No.*	*F/S*	*Name*	*No.*	*F/S*
WHITE SUMAC	WLM 540	AA	**WHITE HEATH**	WLM 545	AA
WHITE BUSH	WLM 542	PA	**WHITE LUPINE**	WLM 546	AA
WHITE HOLLY	WLM 543	AA	**WHITE PINE**	WLM 547	AA
WHITE SAGE	WLM 544	AA			

Displacement, tons: 435 standard; 600 full load
Dimensions, feet (metres): 133 × 31 × 9 *(40·5 × 9·5 × 2·7)*
Main engines: Diesels; 2 shafts; 600 bhp = 9·8 knots
Complement: 21 (1 officer, 20 enlisted men)

All launched in 1943. All seven ships are former US Navy YFs, adapted for the Coast Guard. Fitted with 10 ton capacity boom.

WHITE SUMAC *6/1980, Dr. Robert L. Scheina*

BUOY-TENDERS (INLAND) (WLI)

Name	*No.*	*F/S*
BLUEBELL	WLI 313	PA
AZALEA	WLI 641	AA
BUCKTHORN	WLI 642	GLA

Displacement, tons: 200 full load (178 *Bluebell*)
Dimensions, feet (metres): 100 × 24 × 5 *(30·5 × 7·3 × 1·5) (Buckthorn* draught 4 ft *(1·2))*
Main engines: Diesels; 2 shafts; 440 bhp *(Azalea)* 600 bhp (others) = 9 knots (10·5 *Bluebell*)
Complement: 14 (1 officer, 13 enlisted men) 15 *(Bluebell)*

Azalea fitted with large pile driver.
Bluebell completed 1945, *Azalea* in 1958 and *Buckthorn* in 1963.

BUCKTHORN *1975, USCG*

Name	*No.*	*F/S*
BLACKBERRY	WLI 65303	AA
CHOKEBERRY	WLI 65304	AA

Displacement, tons: 68 full load
Dimensions, feet (metres): 65 × 17 × 4 *(19·8 × 5·2 × 1·2)*
Main engine: Diesel; 1 shaft; 222 hp = 9 knots
Complement: 5 (enlisted men)

Completed in 1946.

Name	*No.*	*F/S*
BAYBERRY	WLI 65400	PA
ELDERBERRY	WLI 65401	AA

Displacement, tons: 68 full load
Dimensions, feet (metres): 65 × 17 × 4 *(19·8 × 5·2 × 1·2)*
Main engines: Diesels; 2 shafts; 400 hp = 11·3 knots
Complement: 5 (enlisted men)

Completed in 1954.

BAYBERRY *2/1979, USCG*

BUOY-TENDERS (RIVER) (WLR)

Notes: (a) All are based on rivers of USA especially the Mississippi and the Missouri and its tributaries.
(b) A new class of WLR approved in the FY 1981 programme but the finances were re-programmed.

SUMAC	WLR 311

Displacement, tons: 404 full load
Dimensions, feet (metres): 115 × 30 × 6 *(35·1 × 9·1 × 1·8)*
Main engines: Diesels; 3 shafts; 960 hp = 10·6 knots
Complement: 23 (1 officer, 22 enlisted men)

Built in 1943.

GASCONADE	WLR 75401	**KICKAPOO**	WLR 75406
MUSKINGUM	WLR 75402	**KANAWHA**	WLR 75407
WYACONDA	WLR 75403	**PATOKA**	WLR 75408
CHIPPEWA	WLR 75404	**CHENA**	WLR 75409
CHEYENNE	WLR 75405		

Displacement, tons: 145 full load
Dimensions, feet (metres): 75 × 22 × 4 *(22·9 × 6·7 × 1·2)*
Main engines: Diesels; 2 shafts; 600 hp = 10·8 knots
Complement: 12 (enlisted men)

Built 1964-71.

OUACHITA	WLR 65501	**SCIOTO**	WLR 65504
CIMARRON	WLR 65502	**OSAGE**	WLR 65505
OBION	WLR 65503	**SANGAMON**	WLR 65506

Displacement, tons: 139 full load
Dimensions, feet (metres): 65·6 × 21 × 5 *(20 × 6·4 × 1·5)*
Main engines: Diesels; 2 shafts; 600 hp = 12·5 knots
Complement: 10 (enlisted men)

Built in 1960-62.

OBION pushing barge *1/1978, USCG*

DOGWOOD WLR 259

Displacement, tons: 230 full load
Dimensions, feet (metres): 114 × 26 × 4 *(34·8 × 7·9 × 1·2)*
Main engines: Diesels; 2 shafts; 2 800 hp = 11 knots
Complement: 21 (1 officer, 20 enlisted men)

Built in 1940.

LANTANA WLR 80310

Displacement, tons: 235 full load
Dimensions, feet (metres): 80 × 30 × 6 *(24·3 × 9·1 × 1·8)*
Main engines: Diesels; 3 shafts; 1 000 hp = 10 knots
Complement: 20 (1 officer, 19 enlisted men)

Built in 1943.

TRAINING CUTTER

1 "EAGLE" CLASS: SAIL TRAINING CUTTER (WIX)

Name	*No.*	*Builders*	*F:S*
EAGLE (ex-*Horst Wessel*)	WIX 327	Blohm & Voss, Hamburg	AA

Displacement, tons: 1 784 full load
Dimensions, feet (metres): 231 wl; 295·2 oa × 39·1 × 17 *(70·4; 90 × 11·9 × 5·2)*
Sail area, square feet: 25 351
Height of masts, feet (metres): fore and main 150·3 *(45·8)*; mizzen 132 *(40·2)*
Main engine: Auxiliary diesel (MAN); 700 bhp; 1 shaft = 10·5 knots (as high as 18 knots under full sail alone)
Range, miles: 5 450 at 7·5 knots (diesel only)
Complement: 245 (19 officers, 46 enlisted men, 180 cadets)

Former German training ship. Launched on 13 June 1936. Taken by the USA as part of reparations after the Second World War for employment in US Coast Guard Practice Squadron. Taken over at Bremerhaven in January 1946; arrived at home port of New London, Connecticut, in July 1946. (Sister ship *Albert Leo Schlageter* was also taken by the USA in 1945 but was sold to Brazil in 1948 and re-sold to Portugal in 1962. Another ship of similar design, *Gorch Foch*, transferred to the USSR in 1946 and survives as *Tovarisch*).

Appearance: When the Coast Guard added the orange-and-blue marking stripes to cutters in the 1960s *Eagle* was exempted because of their effect on her graceful lines; however, in early 1976 the stripes and words "Coast Guard" were added in time for the July 1976 Operation Sail in New York harbour.

Radar: SPS 64.

EAGLE *5/1978, (PH1 L. H. Sallions)*

CONSTRUCTION TENDERS, (INLAND) (WLIC)

Name	*No.*	*F:S*	*Name*	*No.*	*F:S*
PAMLICO	WLIC 800	AA	**KENNEBEC**	WLIC 803	AA
HUDSON	WLIC 801	AA	**SAGINAW**	WLIC 804	AA

Displacement, tons: 413 light
Dimensions, feet (metres): 160·9 × 30 × 4 *(49 × 9·1 × 1·2)*
Main engines: 2 diesels = 11·5 knots
Complement: 15

Built in 1975-78 at the Coast Guard Yard, Curtis Bay, Maryland. *Saginaw* completed as last of class 6 February 1978.

Name	*No.*	*F:S*
COSMOS	WLIC 293	AA
RAMBLER	WLIC 298	AA
SMILAX	WLIC 315	AA
PRIMROSE	WLIC 316	AA

Displacement, tons: 178 full load
Dimensions, feet (metres): 100 × 24 × 5 *(30·5 × 7·3 × 1·5)*
Main engines: Diesels; 2 shafts; 600 bhp = 10·5 knots
Complement: 15 (1 officer, 14 enlisted men)

Cosmos completed in 1942, others in 1944. *Primrose* fitted with pile driver.

PRIMROSE (with pile driver) *1976, John A. Jedrlinic*

Name	*No.*	*F:S*	*Name*	*No.*	*F:S*	*Name*	*No.*	*F:S*
ANVIL	WLIC 75301	AA	**MALLET**	WLIC 75304	AA	**WEDGE**	WLIC 75307	AA
HAMMER	WLIC 75302	AA	**VISE**	WLIC 75305	AA	**SPIKE**	WLIC 75308	AA
SLEDGE	WLIC 75303	AA	**CLAMP**	WLIC 75306	AA	**HATCHET**	WLIC 75309	AA
						AXE	WLIC 75310	

Displacement, tons: 145 full load
Dimensions, feet (metres): 75 (76—WLIC 75306-75310) × 22 × 4 *(22·9 × 6·7 × 1·2)*
Main engines: Diesels; 2 shafts; 600 hp = 10 knots
Complement: 9 or 10 (1 officer in *Mallet, Sledge* and *Vise*; 9 enlisted men in all)

Completed 1962-65.

ANVIL *2/1979, USCG*

OCEANGOING TUGS

3 "DIVER" CLASS: MEDIUM ENDURANCE CUTTERS (WMEC)

Name	*No.*	*Builders*	*USN Comm.*	*F/S*
ACUSHNET (ex-USS *Shackle*)	WMEC 167 (ex-WAGO 167, ex-WAT 167, ex-ARS 9)	Basalt Rock Co, Napa, California	5 Feb 1944	AA
YOCONA (ex-USS *Seize*)	WMEC 168 (ex-WAT 168, ex-ARS 26)	Basalt Rock Co, Napa, California	3 Nov 1944	PA
ESCAPE	WMEC 6 (ex-ARS 6)	Basalt Rock Co, Napa, California	20 Nov 1943	AA

Displacement, tons: 1 557 standard, 1 745 full load
Dimensions, feet (metres): 213·5 × 39 × 15 *(65·1 × 11·9 × 4·6)*
Guns: Removed
Main engines: Diesels (Cooper Bessemer); 3 000 bhp; 2 shafts = 15·5 knots
Complement: *Acushnet* 64 (7 officers, 57 enlisted men); *Yocona* 72 (7 officers, 65 enlisted men)

Large, steel-hulled salvage ships transferred from the Navy to the Coast Guard after World War II and employed in tug and oceanographic duties. *Acushnet* modified for handling environmental data buoys and reclassified WAGO in 1968 and reclassified WMEC in 1980; *Yocona* reclassified as WMEC in 1968. *Escape* transferred on loan from USN on 4 December 1980. Refitted at Curtis Bay Yard in 1980-81.

Radar: SPS 64

ACUSHNET *12/1976, V. H. Young*

5 "CHEROKEE" CLASS: MEDIUM ENDURANCE CUTTERS (WMEC)

Name	*No.*	*Builders*	*USN Comm.*	*F/S*
UTE	WMEC 76 (ex-ATF 76)	United Engineering Co, Alameda, Calif	31 Dec 1942	PA
LIPAN	WMEC 85 (ex-ATF 85)	United Engineering Co, Alameda, Calif	29 Apr 1943	PA
CHILULA	WMEC 153 (ex-WAT 153, ATF 153)	Charleston Shipbuilding & Drydock Co, Charleston, South Carolina	5 Apr 1945	AA
CHEROKEE	WMEC 165 (ex-WAT 165, ATF 66)	Bethlehem Steel Co, Staten Island, New York	26 Apr 1940	AA
TAMAROA (ex-*Zuni*)	WMEC 166 (ex-WAT 166, ATF 95)	Commercial Iron Works, Portland, Oregon	9 Oct 1943	AA

Displacement, tons: 1 731 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Guns: 1—3 in/50; 2—40 mm
Main engines: Diesel-electric (General Motors diesel); 3 000 bhp; 1 shaft = 16·2 knots
Complement: 72 (7 officers, 65 enlisted men)

Steel-hulled tugs transferred from the Navy to the Coast Guard on loan—76 and 85 on 30 September 1980, the other three in 1946 being transferred permanently on 1 June 1969. *Lipan* refitted after transfer. Planned transfer of *Hopi* (ATF 71) from Maritime Administration was cancelled. *Ute* to be located in same port as *Lipan* and used for spare parts. Classification of first three ships loaned changed to WMEC in 1968.

Radar: SPS 64.

TAMAROA *6/1979, Dr. Robert Scheina*

HARBOUR TUGS

11 "110 ft" CLASS: HARBOUR TUGS MEDIUM (WYTM)

MANITOU	WYTM 60	**ARUNDEL**	WYTM 90	**OBJIBWA**	WYTM 97
APALACHEE	WYTM 71	**MAHONING**	WYTM 91	**SNOHOMISH**	WYTM 98
YANKTON	WYTM 72	**RARITAN**	WYTM 93	**SAUK**	WYTM 99
MOHICAN	WYTM 73	**CHINOOK**	WTYM 96		

Displacement, tons: 370 full load
Dimensions, feet (metres): 110 × 27 × 11 *(33·5 × 8·2 × 3·4)*
Main engines: Diesel-electric; 1 shaft; 1 000 hp = 11·2 knots
Complement: 20 (1 officer, 19 enlisted men)

Built in 1943 except WYTM 90 and 93 built in 1939. WYTM 60, 71-73, 91, 96, 98, 99 active in the Atlantic Fleet. Remainder active on inland waterways. *Objibwa* decommissioned 6 May 1980 into inactive reserve. Class to be phased out in 1980s.

MOHICAN *7/1979, Dr. Giorgio Arra*

15 "65 ft" CLASS: HARBOUR TUGS SMALL (WYTL)

CAPSTAN	WYTL 65601	**CATENARY**	WYTL 65606	**LINE**	WYTL 65611
CHOCK	WYTL 65602	**BRIDLE**	WYTL 65607	**WIRE**	WYTL 65612
SWIVEL	WYTL 65603	**PENDANT**	WYTL 65608	**BITT**	WYTL 65613
TACKLE	WYTL 65604	**SHACKLE**	WYTL 65609	**BOLLARD**	WYTL 65614
TOWLINE	WYTL 65605	**HAWSER**	WYTL 65610	**CLEAT**	WYTL 65615

Displacement, tons: 72 full load
Dimensions, feet (metres): 65 × 19 × 7 *(19·8 × 5·8 × 2·1)*
Main engine: Diesel; 1 shaft; 400 hp = 9·8 knots except WYTL 65601-65606 10·5 knots
Complement: 10 (enlisted men)

Built from 1961 to 1967. All active in the Atlantic Fleet.

CAPSTAN (*Mount Vernon* behind) *6/1979, Dr. Robert Scheina*

LIGHTSHIPS (WLV)

WLV 612 (Nantucket)
WLV 613 (Relief)

Displacement, tons: 607 full load
Dimensions, feet (metres): 128 × 30 × 11 *(39 × 9·1 × 3·4)*
Main engine: Diesel; 550 bhp; 1 shaft = 11 knots

Both launched 1950. Assigned to Boston, Massachusetts.
Coast Guard lightships exchange names according to assignment; hull numbers remain constant.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Command

Director, National Ocean Survey:
Rear-Admiral Herbert R. Lippold, Jnr
Associate Director, Office of Fleet Operations:
Rear-Admiral Robert C. Munson
Director, Atlantic Marine Center:
Rear-Admiral Richard C. Holder
Director, Pacific Marine Center:
Rear-Admiral Eugene A. Taylor

Establishment

The "Survey of the Coast" was established by an act of Congress on 10 February 1807. Renamed US Coast Survey in 1834 and again renamed Coast and Geodetic Survey in 1878. The commissioned officer corps was established in 1917. The Coast and Geodetic Survey was made a component of the Environmental Science Services Administration on 13 July 1965, when that agency was established within the Department of Commerce. The Environmental Science Services Administration subsequently became the National Oceanic and Atmospheric Administration (NOAA) in October 1970 with the Coast and Geodetic Survey being renamed National Ocean Survey and its jurisdiction expanded to include the US Lake Survey, formerly a part of the US Army Corps of Engineers, the Coast Guard's national data buoy development project; and the Navy's National Oceanographic Instrumentation Centre.

Missions

The National Ocean Survey operates the ships of the NOAA. During 1972-73 the National Marine Fisheries Service (formerly the Bureau of Commercial Fisheries of the Department of Interior) was consolidated into the NOAA fleet. Approximately 15 small ships and craft 65 ft or longer are counted in the National Marine Fisheries Service—these are not described because of the specialised, non-military nature of their work.
The National Ocean Survey prepares nautical and aeronautical charts; conducts geodetic, geophysical, oceanographic, and marine surveys; predicts tides and currents; tests, evaluates, and calibrates sensing systems for ocean use; and conducts the development of and eventually will operate a national system of automated ocean buoys for obtaining environmental information.
It is a civilian agency that supports national civilian and military requirements. During time of war the ships and officers of NOAA can be expected to operate with the Navy, either as a separate service or integrated into the Navy.

Ships

The following ships may be met with at sea.
Oceanographic Survey Ships: *Researcher, Oceanographer, Discoverer, Surveyor.*
Hydrographic Survey Ships: *Fairweather, Rainier, Mt. Mitchell.*
Coastal Survey Ships: *McArthur, Davidson, Peirce, Whiting.*
Coastal Vessels: *Rude, Heck, Ferrel.*

Personnel

The National Ocean Survey has approximately 225 commissioned officers and 2 250 civil service personnel. In addition, another 125 commissioned officers serve elsewhere in NOAA and several US Navy officers are assigned to NOAA.

URUGUAY

Headquarters' Appointment

Commander-in-Chief of the Navy:
Vice-Admiral Hugo L. Marquez

Diplomatic Representation

Naval Attaché in Washington:
Captain Waldemar Perdomo

Personnel

(a) 1981: Total: 3 500 officers and men (including Naval Infantry)
(b) Voluntary service

Base

Montevideo. Main naval base with a drydock and a slipway

Coast Guard

The Prefectura Maritima operates six coastal patrol craft.

Naval Air Arm

1 222 Bell helicopter
2 H-13 Bell helicopters
4 H-34 Sikorsky helicopters
2 Bell 47G helicopters
3 Grumman S-2A Tracker (ASW)
3 Beech SNB-5 (Training-Transport)
2 North American SNJ (Training)
1 Beech T-34 B Mentor (Training)
9 T-28
1 Beech 200B
3 Beech TC-45H

Prefix to Ships' Names

R.O.U.

Strength of the Fleet

Type	*Active*	*Building*
Frigates	3	—
Corvette	1	—
Large Patrol Craft	5	—
Coastal Patrol Craft	6	—
Training Ship	1	—
Salvage Vessel	1	—
Tankers	2	—
Tenders	3	—
Landing Craft	5	—
Transport	1	—

Mercantile Marine

Lloyd's Register of Shipping:
72 vessels of 198 478 tons gross

DELETIONS

Frigate

1975 *Montevideo*

Corvette

1979 *Maldonado*

Tanker

1978 *President Oribe* (scrapped)

FRIGATES

1 Ex-US "DEALEY" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
18 DE JULIO (ex-USS *Dealey*, DE 1006)	3	Bath Iron Works Corporation	15 Oct 1952	8 Nov 1953	3 June 1954

Displacement, tons: 1 450 standard; 1 914 full load
Dimensions, feet (metres): 314·5 × 36·8 × 13·6 *(95·9 × 11·2 × 4·2)*
Guns: 4—3 in *(76 mm)*/50 (twin Mk 33)
A/S weapons: 2 triple torpedo tubes (Mk 32)
Main engine: 1 De Laval geared turbine; 20 000 shp; 1 shaft
Boilers: 2 Foster-Wheeler
Speed, knots: 25
Range, miles: 4 500 at 15 knots
Complement: 165

Purchased 28 July 1972. *Dealey* was the first US escort ship built after the war.
Refitted at Arsenal de Marinha, Rio de Janeiro 1979-80.

Fire control: Mk 63 forward and aft with SPG 34 radar.

Radar: SPS 6, SPS 10.

18 DE JULIO (old number)

1975, Uruguayan Navy

2 Ex-US "CANNON" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
URUGUAY (ex-USS *Baron*, DE 166)	1	Federal S.B. & D.D. Co, Pt Newark	Dec 1942	9 May 1943	5 July 1943
ARTIGAS (ex-USS *Bronstein*, DE 189)	2	Federal S.B. & D.D. Co, Pt Newark	Aug 1943	14 Nov 1943	13 Dec 1943

Displacement, tons: 1 240 standard; 1 900 full load
Dimensions, feet (metres): 306 × 36·7 × 14 *(93·3 × 11·2 × 4·3)*
Guns: 3—3 in *(76 mm)*/50 (single Mk 22);
2—40 mm/60 (twin Mk 1) (see *Gunnery* note)
A/S weapons: Hedgehog; 8 DCTs; (see *Torpedo tubes* note)
Main engines: Diesel-electric; 2 shafts; 6 000 bhp
Speed, knots: 19
Oil fuel, tons: 315 (95 per cent)
Range, miles: 8 300 at 14 knots
Complement: 160

Appearance: Practically identical, but *Uruguay* can be distinguished by the absence of a mainmast, whereas *Artigas* has a small pole mast aft.

Gunnery: Formerly also mounted ten 20 mm guns, but these have been removed.

Radar: Search: SPS 6.
Tactical: SPS 10.

Torpedo tubes: The three 21-in torpedo tubes in a triple mounting, originally carried, were removed.

Transfers: *Uruguay*, May 1952; *Artigas*, March 1952.

URUGUAY — *1980, USN (PH3 Nocciolo)*

CORVETTE

1 Ex-US "AUK" CLASS

Name	No.	Builders	Commissioned
COMANDANTE PEDRO CAMPBELL (ex-USS *Chickadee* MSF 59)	4 (ex-MS 31, ex-MSF 1)	Defoe B & M Works	9 Nov 1942

Displacement, tons: 1 090 standard; 1 250 full load
Dimensions, feet (metres): 221·2 × 32·2 × 10·8 *(67·5 × 9·8 × 3·3)*
Guns: 1—3 in/50; 4—40 mm (twins); 4—20 mm (twins)
Main engines: Diesel-electric; 2 shafts; 3 532 bhp = 18 knots
Range, miles: 4 300 at 10 knots
Complement: 105

Former US fleet minesweeper. Launched on 20 July 1942. Transferred on loan and commissioned at San Diego on 18 August 1966. Purchased 15 August 1976.

COMANDANTE PEDRO CAMPBELL (old number) — *1971*

"VIGILANTE" Class — *1980, Uruguayan Navy*

1 US "ADJUTANT" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
RIO NEGRO (ex-*Marguerite*, ex-USS *MSC 94*)	13 (ex-MS 32)	USA	1954

Displacement, tons: 375 full load
Dimensions, feet (metres): 144 × 27 × 8·3 *(43·8 × 8·2 × 2·5)*
Guns: 2—20 mm
Main engines: 2 General Motors diesels; 2 shafts; 1 200 bhp = 13 knots
Oil fuel, tons: 40
Range, miles: 2 500 at 10 knots
Complement: 38

Built for France under MDAP. Returned to the USA in 1969. She was transferred to Uruguay at Toulon on 10 November 1969. All sweeping gear removed.

LIGHT FORCES

3 "VIGILANTE" CLASS (LARGE PATROL CRAFT)

Name	No.	Builders	Commissioned
15 de NOVIEMBRE	5	CMN, Cherbourg	16 Oct 1980
25 de AGOSTO	6	CMN, Cherbourg	11 Dec 1980
COMODORO COE	7	CMN, Cherbourg	27 Jan 1981

Displacement, tons: 190
Dimensions, feet (metres): 137 × 22·4 × 7 *(41·8 × 6·8 × 2·1)*
Guns: 1—40 mm Bofors (fwd); 1—20 mm Oerlikon (aft)
Main engines: 2 MTU MD12 V538 TB91 diesels; 5 400 hp; 2 shafts = 28 knots
Range, miles: 2 400 at 15 knots
Complement: 28 (5 officers, 23 ratings)

Ordered in 1979. Steel hull. First keel laid 7 December 1979, second 6 February 1980.

Fire control: CSEE Naja optronic director.

Radar: Decca TM 1226C.

RIO NEGRO (old number) — *1975, Uruguayan Navy*

1 LARGE PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
SALTO	14 (ex-GS 24, ex-PR 2)	Cantieri Navali Riuniti, Ancona	1936

Displacement, tons: 150 standard; 180 full load
Dimensions, feet (metres): 137 × 18 × 10 *(41·8 × 5·5 × 3·1)*
Gun: 1—40 mm
Main engines: 2 Germania-Krupp diesels; 2 shafts; 1 000 bhp = 17 knots
Range, miles: 4 000 at 10 knots
Complement: 26

SALTO (old pennant number) *1971*

1 Ex-US 63 ft AVR (COASTAL PATROL CRAFT)

COLONIA 10 (ex-AR 1)

Displacement, tons: 25 standard; 34 full load
Dimensions, feet (metres): 63 × 15 × 3·8 *(19·2 × 4·6 × 1·2)*
Guns: 4 MGs
Main engines: 2 Hall Scott Defender; 1 260 bhp = 33·5 knots
Range, miles: 600 at 15 knots
Complement: 8

Launched 4 July 1944.

COLONIA *1975, Uruguayan Navy*

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
CARMELO	11	Krogerwerft, Rendsburg	1957

Displacement, tons: 70
Dimensions, feet (metres): 93 × 19 × 7 *(28·4 × 5·8 × 2·1)*
Gun: 1—20 mm
Speed, knots: 25

CARMELO *1975, Uruguayan Navy*

1 COASTAL PATROL CRAFT

Name	*No.*	*Builders*	*Commissioned*
PAYSANDU	12	Sewart, USA	1968

Displacement, tons: 60
Dimensions, feet (metres): 83 × 18 × 6 *(25·3 × 5·5 × 1·8)*
Guns: 3—5 MGs
Main engines: 2 General Motors diesels; 2 shafts = 22 knots

PAYSANDU *1975, Uruguayan Navy*

3 COASTAL PATROL CRAFT

701 **702** **703**

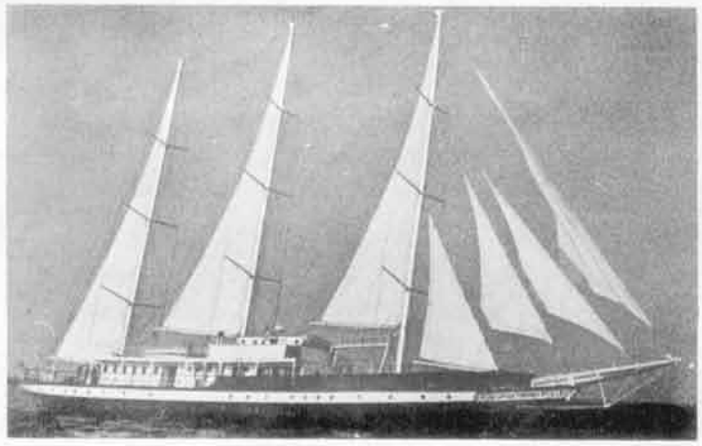
43 ft craft transferred by the US Navy in February 1970.

TRAINING SHIP

Name	*No.*	*Builders*	*Commissioned*
CAPITAN MIRANDA	20 (ex-GS 10)	Sociedad Espanola de Construccion Naval, Matagorda, Cadiz	1930

Displacement, tons: 516 standard; 527 full load
Dimensions, feet (metres): 179 × 26 × 10·5 *(54·6 × 7·9 × 3·2)*
Main engine: 1 MAN diesel; 500 bhp = 11 knots
Oil fuel, tons: 37
Complement: 49

Originally a three-masted schooner with pronounced clipper bow used as a cadet training ship. Converted for service as a diesel-driven survey ship and then reconverted to her original condition, commissioning as cadet training ship once more in 1978.



CAPITAN MIRANDA *1980, Uruguayan Navy*

SALVAGE VESSEL

1 Ex-US "COHOES" CLASS

Name	*No.*	*Builders*	*Commissioned*
HURACAN (ex-USS *Nahant AN 83*)	25 (ex-AM 25, ex-BT 30)	Commercial Ironworks, Portland, Oregon	1945

Displacement, tons: 650 standard; 855 full load
Dimensions, feet (metres): 168·5 × 33·8 × 11·7 *(51·4 × 10·3 × 3·6)*
Guns: 3—20 mm (single)
Main engines: Diesel-electric; 1 shaft; 1 200 bhp = 11·5 knots
Complement: 48

Former US netlayer, transferred December 1968 for salvage services carrying divers and underwater swimmers. In 1954 diving equipment and a recompression chamber were installed.

HURACAN *1975, Uruguayan Navy*

AMPHIBIOUS CRAFT

2 Ex-US "LCM 6" CLASS

LD 40 **LD 41**

Transferred on lease October 1972.

1 LCU

ROU 42

Displacement, tons: 12 full load
Dimensions, feet (metres): 39·3 × 11·3 × 3·6 *(12 × 3·4 × 1·1)*
Main engines: 2 General Motors Bedford 330 diesels; 192 hp = 6 knots

Built by Mapell SA.

2 LCUs

ROU 43, ROU 45

Displacement, tons: 31·4 full load
Dimensions, feet (metres): 46·5 × 11·6 × 2·7 *(14·1 × 3·5 × 0·8)*
Main engines: 2 General Motors 7IL diesels; 272 hp = 9 knots

Built at Naval Shipyard, Montevideo.

TANKERS

Note: Both operate under commercial charter to ANCAP (State Oil Company) when not required for naval purposes.

Name	*No.*	*Builders*	*Commissioned*
JUAN A. LAVALLEJA (ex-M/V *Solfonn*)	27 (ex-AO 27)	Kawasaki, Kobe	1975

Measurement, tons: 68 931 gross; 131 663 deadweight
Dimensions, feet (metres): 895·8 × 144·6 × 51·6 *(273 × 44·1 × 15·7)*
Main engines: 2 steam turbines; 24 500 shp = 15·5 knots

Former Norwegian tanker laid-up on 13 October 1975.
Bought by Uruguayan Navy 13 January 1977.
Damaged by grounding off Arzew, Algeria 28 December 1980.

JUAN A. LAVALLEJA (old number) *1977, J. van der Woude*

Name	*No.*	*Builders*	*Commissioned*
PRESIDENTE RIVERA	28 (ex-AO 28)	EN Bazán, Spain	1971

Measurement, tons: 19 686 gross; 31 885 deadweight
Dimensions, feet (metres): 636·3 × 84 × 32 *(194 × 25·6 × 9·8)*
Main engines: 15 300 bhp = 15 knots
Complement: 58

Completed refit by James Brown and Hamer Ltd (Durban) in April 1979.

PRESIDENTE RIVERA (old number) *1975, Uruguayan Navy*

TRANSPORT

Name	*No.*	*Builders*	*Commissioned*
PRESIDENTE ORIBE (ex-*Catrina*)	29	Frederikshavn Vaerft, Denmark	1966

Displacement, tons: 1 153 full load
Dimensions, feet (metres): 178 × 31·5 × 10·8 *(54·2 × 9·6 × 3·3)*
Main engine: 1 Burmeister and Wain diesel; 520 hp = 10 knots

Ex-Danish freighter now modernised and repaired after grounding in February 1979, being salvaged by the Uruguayan navy and subsequently bought. Commissioned in navy in 1980.

MISCELLANEOUS

VANGUARDIA AM 26

Very old harbour tender.

— (ex-US *YTL 589*)

Transferred September 1965. Small harbour tug.

Following also reported: UA 12 (ex-US) repair ship, *Anapal* No 1, ex-US 20 LH, ex-US 26 MW, *Banco Ingles*, LV 21 (ex-US WLV *Portland*) (no longer a light-ship).

VENEZUELA

Administration

Commander General of the Navy (Chief of Naval Operations):
Vice-Admiral Jésus R. Bertorelli Moreno
Deputy Chief of Naval Operations:
Vice-Admiral José Angel Rodriguez Mottola

Diplomatic Representation

Naval Attaché in London:
Rear-Admiral Aquiles Garcia Saldeño
Assistant Naval Attaché in London:
Commander Anibal Montenegro Navas
Naval Attaché in Washington:
Rear-Admiral Luis Augusto Durand
Assistant Naval Attaché in Washington:
Commander Pedro Pablo Leon

Personnel

(a) 1981: 7 500 officers and men including 4 000 of the Marine Corps (3 battalions)
(b) 18 months' national service (since 15 Sep 1979)

National Guard

The Fuerzas Armadas de Cooperacion, generally known as the National Guard, is a paramilitary organisation, 10 000 strong. It is concerned, amongst other things, with customs and internal security—the Maritime Wing operates the Coastal Patrol Craft listed under Light Forces, though these nominally belong to the Navy.

Bases

Caracas: Main HQ.
Puerto Cabello: Main Naval Base (Dockyard, 1 Drydock, 1 synchrolift, 1 floating crane).
La Guaira: Small Naval Base (Naval Academy).
Puerto de Hierro: Naval Supply Base.
Falcón: Naval Supply Base.

Naval Air Arm

6 Bell 47J helicopters
6 Grumman S-2E Trackers (ASW)
1 Cessna 337 (Liaison)
1 Avro HS-748
1 Beech King Air
6 Agusta AB-212 (for "Lupo" class)
2 Cessna 310R
1 Cessna 310
2 Douglas C-47

Strength of the Fleet

Type	*Active*	*Building*
Submarines, Patrol	3	2
Destroyers	2	—
Frigates	6	2
Fast Attack Craft—Missile/Gun	6	—
Coastal Patrol Craft	21	—
LSTs	2	—
LSMs	2	—
LCVPs	12	—
Transports	2	—
Survey Ship and Craft	3	—
Ocean Tugs	3	—
Harbour Tugs	7	—
Sail Training Ship	1	—
National Guard CPC	43	—

Mercantile Marine

Lloyd's Register of Shipping:
225 vessels of 848 540 tons gross

DELETIONS

Submarines

1977 *Carite* (ex-USS *Tilefish*) (28 Jan)
1979 *Tiburon*

Destroyers

1975 *Aragua*
1978 *Nueva Esparta, Zulia* (museum ship)

Frigates

1976 *General José de Austria*
1977 *General José Garcia*
1978 *Almirante Brion, General Juan José Flores*

Light Forces

1976-77 *Albatros, Alcatraz, Calamar, Caracol, Gaviota, Mejillon, Petrel, Pulpo,* (US "PC-461" class)

Survey Ships

1975 *Puerto Miranda* (H 03), *Puerto de Nutrias* (H 02)

Transports

1978/79 *Los Monjes* (sunk as target, Sep 1979), *Los Testigos*

Tugs

1979 *Fabrio Gallipoli, Diana 3*

Floating Dock

1980 *Golfo de Cariaco*

PENNANT LIST

Submarines

S 22	Picua
S 31	Sabalo
S 32	Caribe

Destroyers

D 21	Carabobo
D 22	Falcon

Frigates

F 11	Almirante Clemente
F 12	General José Trinidad Moran
F 21	Mariscal Sucre
F 22	Almirante Brion
F 23	General Urdaneta
F 24	General Soublette
F 25	General Salon
F 26	José Felix Ribas

Light Forces

C 87	Rio Orinoco
C 88	Rio Ventuari
C 89	Rio Caparo
C 90	Rio Venamo
C 91	Rio Torres
C 92	Rio Escalante
C 93	Rio Limón
C 94	Rio San Juan
C 95	Rio Tocuyo
C 96	Rio Turbio
C 128-138	"Rio Orinoco" class
P 11	Constitución
P 12	Federación
P 13	Independencia
P 14	Libertad
P 15	Patria
P 16	Victoria
PF 11	Guaicaipuro
PF 12	Tamanaco
PF 21	Manaure
PF 22	Mara

Amphibious Forces

T 22	Los Roques
T 23	Los Frailes
T 31	Guyana
T 51	Amazonas

Transports

T 11	Las Aves
T 42	Valencia

Survey Ships

H 11	Puerto Santo
P 119	Gabriela
P 121	Lely

Tugs

C 139-142	Harbour Tugs
R 11	Fernando Gómez
R 21	Felipe Larrazabal
R 22	Antonio Picardi
R 23	Miguel Rodriguez

SUBMARINES

2 + 2 HOWALDTSWERKE TYPE 209

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SABALO	S 31 (ex-S 21)	Howaldtswerke, Kiel	1973	21 Aug 1975	6 Aug 1976
CARIBE	S 32 (ex-S 22)	Howaldtswerke, Kiel	1973	16 Dec 1975	11 Mar 1977

Displacement, tons: 990 surfaced; 1 350 dived
Dimensions, feet (metres): 177·1 × 20·3 × 18 *(54 × 6·2 × 5·5)*
Torpedo tubes: 8—21 in (with reloads) bow
Main machinery: Diesel-electric; 4 MTU-Siemens diesel generators; 1 Siemens electric motor 5 000 hp; 1 shaft
Speed, knots: 10 surfaced; 22 dived
Endurance: 50 days
Complement: 31

Type 209, IK81 designed by Ingenieurkontor Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal, Essen, all acting as a consortium.
A single-hull design with two main ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. Slow revving single screw. Very high capacity batteries with GRP lead-acid cells and battery-cooling—by W. Hagen. Active and passive sonar, sonar detection set, sound-ranging equipment and underwater telephone. Have two periscopes, radar and Omega receiver. Fore-planes retract. Ordered in 1971.
Second pair ordered 10 March 1977.

CARIBE and SABALO *1978, Venezuelan Navy*

1 Ex-US "GUPPY II" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
PICUA (ex-USS *Grenadier*, SS 525)	S 22 (ex-S 13)	Boston Navy Yard	8 Feb 1944	15 Dec 1944	10 Feb 1951

Displacement, tons: 1 870 surfaced; 2 420 dived
Dimensions, feet (metres): 307·5 × 27 × 18 *(93·8 × 8·2 × 5·5)*
Torpedo tubes: 10—21 in *(533 mm)* (6 bow, 4 stern)
Main machinery: 3 diesels; 4 800 shp; 2 electric motors; 5 400 shp; 2 shafts
Speed, knots: 18 surfaced; 15 dived
Range, miles: 12 000 at 10 knots
Oil fuel, tons: 300
Complement: 80

Transferred 15 May 1973. Refitted in Argentina 1979-80.

PICUA (as GRENADIER) *USN*

DESTROYERS

1 Ex-US "ALLEN M. SUMNER" and 1 Ex-US "ALLEN M. SUMNER (FRAM II)" CLASSES

Name	No.	Builders	Laid down	Launched	Commissioned
CARABOBO (ex-USS *Beatty* DD 756)	D 21 (ex-D 41)	Bethlehem, Staten Island	1944	30 Nov 1944	31 Mar 1945
FALCON (ex-USS *Robert K. Huntington* DD 781) (Fram II)	D 22 (ex-D 51)	Todd Pacific Shipyards	1944	5 Dec 1944	3 Mar 1945

Displacement, tons: 2 200 standard; 3 320 full load
Dimensions, feet (metres): 376·5 × 40·9 × 19 *(114·8 × 12·5 × 5·8)*
Guns: 6—5 in *(127 mm)*/38 (twin Mk 38)
A/S weapons: 2 Hedgehogs; 2 triple torpedo tubes (Mk 32); facilities for small helicopter (in *Falcon*)
Main engines: 2 geared turbines; 60 000 shp; 2 shafts
Boilers: 4
Speed, knots: 34
Range, miles: 4 600 at 15 knots
Complement: 274

Carabobo transferred 14 July 1972. *Falcon* purchased from US Navy 31 October 1973. Both refitted in USA in 1977.

Fire control: *Carabobo*; Mk 37 GFCS forward with Mk 25 radar; Mk 51 GFCS aft (no radar).

Radar: Surface search: SPS 10.
Air search: SPS 40 *(Falcon)*, SPS 6 *(Carabobo)*.

Sonar: Hull-mounted; SQS 29 series. VDS (in *Falcon*).

FALCON — *1978, Venezuelan Navy*

FRIGATES

Note: It is reported that three corvettes are to be ordered.

4 + 2 "LUPO" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
MARISCAL SUCRE	F 21	Cantieri Navali Riuniti, Riva Trigoso	19 Nov 1976	28 Sep 1978	19 Nov 1979
ALMIRANTE BRION	F 22	Cantieri Navali Riuniti, Riva Trigoso	June 1977	22 Feb 1979	Oct 1980
GENERAL URDANETA	F 23	Cantieri Navali Riuniti, Ancona	Feb 1978	23 Mar 1979	Feb 1981
GENERAL SOUBLETTE	F 24	Cantieri Navali Riuniti, Riva Trigoso	26 Aug 1978	4 Jan 1980	Apr 1981
GENERAL SALOM	F 25	Cantieri Navali Riuniti, Ancona	7 Nov 1978	13 Jan 1980	Oct 1981
JOSÉ FELIX RIBAS	F 26	Cantieri Navali Riuniti, Riva Trigoso	21 Aug 1979	4 Oct 1980	Feb 1982

Displacement, tons: 2 208 standard; 2 500 full load
Dimensions, feet (metres): 371·3 × 37·1 × 12·1 *(113·2 × 11·3 × 3·7)*
Aircraft: 1 AB212 helicopter (fixed hangar)
Missiles: SSM: 8 Otomat (single launchers); SAM: 8 Aspide (8-cell launcher for Albatros system)
Guns: 1—5 in *(127 mm)*/54 (Compact); 4—40 mm/L70 Breda (twins)
Rocket launchers: 2 SCLAR 4·1 in multi-tube mountings
A/S weapons: 6 tubes for A/S torpedoes (triples)
Main engines: CODAG. 2 Fiat/GEI LM 2 500 gas turbines; 34 400 bhp; 2 GMT A230/20M diesels; 7 800 hp; 2 shafts
Speed, knots: 35; 21 on diesels
Range, miles: 5 000 at 15 knots
Complement: 185

Letter of intent signed 24 October 1975.

Missiles: With fixed hangar no reloads carried for Albatros system.

Radar: Search: Selenia MM/SPS 74.
Navigation: SMA SPQ/2F.
Fire control (guns): Elsag Mark 10 Mod O Argo.
Fire control (missiles): EX 77 Mod O.

Sonar: SQS 29.

MARISCAL SUCRE — *1980, CNR*

2 "ALMIRANTE CLEMENTE" CLASS

Name	No.	Builders	Laid down	Launched	Commissioned
ALMIRANTE CLEMENTE	F 11 (ex-D 12)	Ansaldo, Leghorn	5 May 1954	12 Dec 1954	1956
GENERAL JOSÉ TRINIDAD MORAN	F 12 (ex-D 22)	Ansaldo, Leghorn	5 May 1954	12 Dec 1954	1956

Displacement, tons: 1 300 standard; 1 500 full load
Dimensions, feet (metres): 325·1 × 35·5 × 12·2 *(99·1 × 10·8 × 3·7)*
Guns: 2—76 mm/62 (single Compact); 2—40 mm/70 (twin)
A/S weapons: 2 Hedgehogs, 4 DCTs and 2 DC racks
Main engines: 2 sets geared turbines; 2 shafts; 24 000 shp
Boilers: 2 Foster-Wheeler
Speed, knots: 32
Oil fuel, tons: 350
Range, miles: 3 500 at 15 knots
Complement: 162 (12 officers, 150 men)

Survivors of a class of six ordered in 1953. Fitted with Denny-Brown fin stabilisers and air conditioned throughout the living and command spaces.

Modernisation: *Almirante Clemente* and *General José Trinidad Moran* were taken in hand for refit by Cammell Laird/Plessey group in April 1968. 4-in guns replaced by 76 mm OTO Melara Compact. *Almirante Clemente* started her post-refit trials in February 1975 and *General José Trinidad Moran* after trials sailed mid-January 1976 for Venezuela.

Radar: Search: Plessey AWS-1.
Fire control: I Band.

GENERAL JOSÉ TRINIDAD MORAN — *1978, Venezuelan Navy*

LIGHT FORCES

6 VOSPER-THORNYCROFT "121 ft" CLASS (FAST ATTACK CRAFT—MISSILE AND GUN)

Name	No.	Builders	Laid down	Launched	Commissioned
CONSITUCION	P 11	Vosper-Thornycroft Ltd	Jan 1973	1 June 1973	16 Aug 1974
*FEDERACIÓN	P 12	Vosper-Thornycroft Ltd	Aug 1973	26 Feb 1974	25 Mar 1975
INDEPENDENCIA	P 13	Vosper-Thornycroft Ltd	Feb 1973	24 July 1973	20 Sep 1974
*LIBERTAD	P 14	Vosper-Thornycroft Ltd	Sep 1973	5 Mar 1974	12 June 1975
PATRIA	P 15	Vosper-Thornycroft Ltd	Mar 1973	27 Sep 1973	9 Jan 1975
*VICTORIA	P 16	Vosper-Thornycroft Ltd	Mar 1974	3 Sep 1974	22 Sep 1975

* Missile craft

Displacement, tons: 170
Dimensions, feet (metres): 121 × 23·3 × 6 *(36·9 × 7·1 × 1·8)*
Missiles: SSM: 2 Otomat (P 12, 14 and 16) (single cells)
Gun: 1—76 mm/62 (Compact) (P 11, 13 and 15);
1—40 mm gun (P 12, 14 and 16)
Main engines: 2 MTU diesels; 7 200 hp; 2 shafts
Speed, knots: 27; 31 max
Range, miles: 1 350 at 16 knots
Complement: 17 (3 officers, 14 men)

A £6 million order of a design fitted with Elsag fire control system NA 10 mod 1 and Selenia radar in 76 mm gun craft.

Radar: SPQ 2D.

FEDERACIÓN *1978, Venezuelan Navy*

AMPHIBIOUS FORCES

Note: It is reported that additional LSTs are planned.

1 Ex-US "TERREBONNE PARISH" CLASS (LST)

Name	No.	Builders	Commissioned
AMAZONAS (ex-USS *Vernon County* LST 1161)	T 51 (ex-T 21)	Ingalls Shipbuilding Corporation	1953

Displacement, tons: 2 590 light; 5 800 full load
Dimensions, feet (metres): 384 × 55 × 17 *(117·1 × 16·7 × 5·2)*
Guns: 6—3 in/50 (twins)
Main engines: 4 General Motors diesels; 2 shafts; cp propeller; 6 000 bhp = 15 knots
Complement: 116
Troops: 395

Built 1952-53. Carries four LCVP landing craft. Transferred on loan 29 June 1973. Purchased 30 December 1977.

1 Ex-US "ACHELOUS" CLASS

Name	No.	Builders	Commissioned
GUYANA (ex-USS *Quirinus*, ARL 39, ex-*LST 1151*)	T 31 (ex-T 18)	Chicago Bridge & Iron Co, Seneca, Illinois	1945

Displacement, tons: 1 625 light; 4 100 full load
Dimensions, feet (metres): 328 × 50 × 11 *(100 × 15·2 × 3·4)*
Guns: 8—40 mm (two quad mountings)
Main engines: General Motors diesels; 2 shafts; 1 700 bhp = 11·6 knots
Complement: 81 (11 officers, 70 men)

Former US Navy landing craft repair ship. Laid down on 3 March 1945. Loaned to Venezuela in June 1962 and now used as a transport. Purchased 30 December 1977.

2 Ex-US "LSM I" CLASS

Name	No.	Builders	Commissioned
LOS ROQUES (ex-USS *LSM 543*)	T 22 (ex-T 14)	Brown Shipbuilding Co, Houston, Texas	1945
LOS FRAILES (ex-USS *LSM 544*)	T 23 (ex-T 15)	Brown Shipbuilding Co, Houston, Texas	1945

Displacement, tons: 743 beaching; 1 095 full load
Dimensions, feet (metres): 203·5 × 34·2 × 8·3 *(62·1 × 10·4 × 2·5)*
Guns: 1—40 mm; 4—20 mm
Main engines: Direct drive diesels; 2 shafts; 3 600 bhp = 13 knots
Range, miles: 9 000 at 11 knots
Complement: 59

Transferred to Venezuela under MAP, *Los Roques* September 1959, *Los Frailes* December 1959.

LOS FRAILES *1978, Venezuelan Navy*

12 LCVPS

Built by Dianca, Puerto Cabello 1976-77.

TRANSPORTS

Note: It is reported that a Fleet Support Ship is planned.

1 CANADIAN TYPE

Name	No.	Builders	Commissioned
VALENCIA (ex-M/V *Ciudad de Valencia*)	T 42	Vickers, Canada	1953

Measurement, tons: 4 297 gross; 5 885 deadweight
Dimensions, feet (metres): 420·5 × 55 × 22·3 *(128·2 × 16·8 × 6·8)*
Main engine: 1 Nordberg diesel; 4 275 hp = 15 knots

Acquired from state shipping company in 1977.

VALENCIA *1978, Venezuelan Navy*

Name	No.	Builders	Commissioned
LAS AVES (ex-*Dos de Diciembre*)	T 11 (ex-T 12)	Chantiers Dubigeon, Nantes-Chantenay	1955

Displacement, tons: 944
Dimensions, feet (metres): 234·2 × 33·5 × 10 *(71 × 10·2 × 3·1)*
Guns: 4—20 mm (2 twin)
Main engines: 2 diesels; 2 shafts; 1 600 bhp = 15 knots
Range, miles: 2 600 at 11 knots

Launched in September 1954. Light transport for naval personnel. Renamed *Las Aves* in 1961. Can be used as Presidential Yacht.

LAS AVES *1970, Venezuelan Navy*

SURVEY VESSELS

1 Ex-US "COHOES" CLASS

Name	No.	Builders	Commissioned
PUERTO SANTO (ex-USS *Marietta*, AN 82)	H 11 (ex-H 01)	Commercial Iron Works, Portland, Oregon	1945

Displacement, tons: 650 standard; 855 full load
Dimensions, feet (metres): 168·5 × 33·8 × 11·7 *(51·4 × 10·3 × 3·6)*
Guns: 3—20 mm
Main engines: Bush-Sulzer diesel-electric; 1 shaft; 1 200 bhp = 12 knots
Complement: 46

Puerto Santo loaned from the USA in January 1961 under MAP and converted into Hydrographic survey vessel and buoy tender by US Coast Guard Yard, Curtis Bay, Maryland, in February 1962. Originally carried one 3-in/50 gun. Since 1977 used full-time as a buoy tender. Acquired by sale 30 December 1977. The bow horns now removed.

PUERTO SANTO *1978, Venezuelan Navy*

2 SURVEY LAUNCHES

Name	Administrative No.	Builders	Commissioned
GABRIELA	P 119	Abeking and Rasmussen, Lemwerder	5 Feb 1974
LELY	P 121	Abeking and Rasmussen, Lemwerder	7 Feb 1974

Displacement, tons: 90
Dimensions, feet (metres): 88·6 × 18·4 × 4·9 *(27 × 5·6 × 1·5)*
Main engines: 2 diesels; 2 300 hp = 20 knots
Complement: 16

Lely laid down 28 May 1973, launched 12 December 1973 and *Gabriela* laid down 10 March 1973, launched 29 November 1973. Non-naval—civilian manned by Instituto de Canalizaciones.

TUGS

3 Ex-US "CHEROKEE" CLASS

Name	No.	Builders	Commissioned
FELIPE LARRAZABAL (ex-USS *Utina*, ATF 163)	R 21	Charleston S.B. and D.D. Co	1945
ANTONIO PICARDI (ex-USS *Nipmuc*, ATF 157)	R 22	Charleston S.B. and D.D. Co	8 July 1945
MIGUEL RODRIGUEZ (ex-USS *Salinan*, ATF 161)	R 23	Charleston S.B. and D.D. Co	9 Nov 1945

Displacement, tons: 1 235 standard; 1 675 full load
Dimensions, feet (metres): 205 × 38·5 × 17 *(62·5 × 11·7 × 5·2)*
Gun: 1—3 in *(76 mm)*/50 (in R 21)
Main engines: Diesel-electric; 3 000 bhp; 1 shaft
Speed, knots: 15
Complement: 85

R 21 transferred 3 September 1971. This is the third tug of this name. The first (ex-USS *Discoverer*) was deleted in 1962. The second (ex-USS *Tolowa*, ATF 116) was deleted in 1972 after damage when grounded. R 21 purchased 30 December 1977; other two 1 September 1978.

ANTONIO PICARDI *1978, Venezuelan Navy*

1 HARBOUR TUG

C 142 (Administrative number)

Built by Dianca, Puerto Cabello. Two Werkspoor diesels; two shafts; 1 600 bhp. Ordered in 1973. Commissioned in 1978. Three similar tugs, C 139, 140 and 141 are run by Ministry of Communications.

1 Ex-US HARBOUR TUG

FERNANDO GOMEZ (ex-YTM 744) R 11 (ex-R 12)

Displacement, tons: 161
Dimensions, feet (metres): 80 × 19 × 8 *(24·5 × 5·8 × 2·4)*
Main engines: Clark diesel; 6-cyl; 315 rpm; 380 bhp = 15 knots
Complement: 10

5 Ex-US "YTL 421" CLASS (SMALL HARBOUR TUGS)

Ex-US YTL 446, 451, 455, 590, 592

Of 80 ft long, leased in January 1963.

SAIL TRAINING SHIP

SIMON BOLIVAR

Displacement, tons: 1 260 full load
Measurement, tons: 934 gross
Dimensions, feet (metres): 270·6 × 34·8 × 13·8 *(82·5 × 10·6 × 4·2)*
Auxiliary engine: 1 General Motors diesel; 700 hp = 10 knots
Accommodation: 195 (17 officers, 76 ratings, 18 midshipwomen, 84 midshipmen)

Ordered from Astilleros Celaya, Spain in 1978. Launched 21 September 1979. Completed 14 August 1980.
Three-masted barque; near sister to *Guayas* (Ecuador).
Sail area (23 sails) 1 650 m². Highest mast 131·2 ft *(40 m)*.

MISCELLANEOUS

Ex-US YR 48 (floating workshop) transferred 1965. Purchased 30 December 1977.

One floating crane with 40 ton lift.

NATIONAL GUARD

21 "RIO ORINOCO" CLASS (COASTAL PATROL CRAFT)

Name	Administrative No.	Builders	Commissioned
RIO ORINOCO	C 87	Inma, La Spezia	1974
RIO VENTUARI	C 88	Inma, La Spezia	1974
RIO CAPARO	C 89	Inma, La Spezia	1974
RIO VENAMO	C 90	Inma, La Spezia	1974
RIO TORRES	C 91	Inma, La Spezia	1974
RIO ESCALANTE	C 92	Inma, La Spezia	1975
RIO LIMON	C 93	Inma, La Spezia	1975
RIO SAN JUAN	C 94	Inma, La Spezia	1975
RIO TUCUYO	C 95	Inma, La Spezia	1975
RIO TURBIO	C 96	Inma, La Spezia	1975
—	C 128-138	Dianca, Puerto Cabello	—

Displacement, tons: 65
Dimensions, feet (metres): 92·8 × 15·7 × 4·9 *(28·3 × 4·8 × 1·5)*
Main engines: 2 MTU diesels; 2 200 bhp = 25 knots

Ordered in May 1973. Assistance given in overseeing at Puerto Cabello by Inma.
First Cabello-built craft launched March 1974 and six were completed by end 1975.

12 COASTAL PATROL CRAFT

RIO META
RIO PORTUGUESA
RIO URIBANTE
+ 9

Displacement, tons: 45
Dimensions, feet (metres): 88·6 × 16 × 4·9 *(27 × 4·9 × 1·5)*
Guns: 1—20 mm; 1 MG
Main engines: 2 diesels; 3 300 hp = 30 knots
Range, miles: 1 500 at 15 knots
Complement: 12

Built at Chantiers Navals de l'Esterel; first six 1970-71, second six 1976-77.

8 "RIO" CLASS (COASTAL PATROL CRAFT)

Name	No.	Builders	Commissioned
RIO APURE	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO ARAUCA	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO CABRIALES	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO CARONI	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO GUARICO	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO NEGRO	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO NEVERI	—	Chantiers Navals de l'Esterel, Cannes	1955
RIO TUX	—	Chantiers Navals de l'Esterel, Cannes	1955

Displacement, tons: 38
Dimensions, feet (metres): 80·3 × 15·3 × 4·2 *(24·5 × 4·7 × 1·3)*
Main engines: 2 Mercedes diesels; 1 500 bhp; 2 shafts = 27 knots
Complement: 15

"RIO" Class — *1978, Ch. Navals de L'Esterel*

1 COASTAL PATROL CRAFT

GOLFO DE CARIACO

Displacement, tons: 37
Dimensions, feet (metres): 65 × 18 × 9 *(20 × 5·5 × 2·8)*
Main engines: Diesels; speed = 19 knots
Complement: 10

1 COASTAL PATROL CRAFT

RIO SANTO DOMINGO

Displacement, tons: 40
Dimensions, feet (metres): 70 × 15 × 6 *(22 × 4·6 × 1·9)*
Main engines: 2 General Motors diesels; 1 250 bhp = 24 knots
Complement: 10

VIET-NAM

Administration

Commander in Chief of the Navy:
Rear-Admiral Ta Xuan Thu

Strength of the Fleet

So far as operational availability is concerned only a small proportion of this considerable force can be reckoned fit for sea due to lack of maintenance and spares as well as a lengthy period without sufficient fuel for sea-going training. In the last three years the USSR has transferred a considerable number of ships and craft as well as providing fuel in return for the use of Cam-Ranh Bay naval base. In the following lists the strength of this navy is split between "operational" and "non-operational" on the best available evidence. However many of the latter category may never be able to put to sea again.

Personnel

1981: ?

Mercantile Marine

Lloyd's Register of Shipping:
93 vessels of 240 895 tons gross

OPERATIONAL SHIPS

FRIGATES

4 Ex-SOVIET "PETYA I" CLASS

Displacement, tons: 950 standard; 1 100 full load
Dimensions, feet (metres): 270 × 29·9 × 10·5 *(82·3 × 9·1 × 3·2)*
Guns: 4—76 mm (twins)
A/S weapons: 5—16 in *(406 mm)* torpedo tubes (quin); 4—MBU 6000
Main engines: 2 gas turbines; 30 000 hp; 1 diesel; 6 000 hp; 3 shafts; = 35 knots
Range, miles: 4 000 at 20 knots
Complement: 98

Two transferred in 1978 and two in April 1981.

1 Ex-US "BARNEGAT" CLASS

Name/Number	Builders	Commissioned
HQ 01 (ex-*Pham Ngu Lao*, ex-USCG *Absecon*, WHEC 374, ex-AVP 23)	Lake Washington S.Y.	28 Jan 1943

Displacement, tons: 1 766 standard; 2 800 full load
Dimensions, feet (metres): 310·8 × 41·1 × 13·5 *(94·7 × 12·5 × 4·1)*
Guns: 1—5 in *(127 mm)*/38; 2—81 mm mortars; several MGs
Main engines: 2 diesels (Fairbanks-Morse); 6 080 bhp; 2 shafts
Speed, knots: Approx 18
Complement: Approx 200

Last of a group built as seaplane tenders for the US Navy.
Transferred to US Coast Guard in 1948, initially on loan designated WAVP and then on permanent transfer subsequently redesignated as high endurance cutter (WHEC). Transferred from US Coast Guard to South Vietnamese Navy in 1971. Was active in Viet-Nam in November 1978.

1 Ex-US "SAVAGE" CLASS

Name	Builders	Commissioned
TRAN KHANH DU (ex-USS *Forster*, DER 334)	Consolidated Steel Corporation, Orange, Texas	25 Jan 1944

Displacement, tons: 1 590 standard; 1 850 full load
Dimensions, feet (metres): 306 × 36·6 × 14 *(93·3 × 11·2 × 4·3)*
Guns: 2—3 in *(76 mm)*/50 (single)
A/S weapons: 6 (Mk 32 triple) torpedo tubes; 1 trainable Hedgehog (Mk 15); depth charge rack
Main engines: Diesels (Fairbank-Morse); 6 000 bhp; 2 shafts
Speed, knots: 21
Complement: Approx 170

Former US Navy destroyer escort of the FMR design group. Transferred to South Vietnamese Navy on 25 September 1971. Was in overhaul at time of occupation of South Viet-Nam and has not been reported recently.

Radar: Search: SPS 10 and 28.

CORVETTES

2 Ex-US "ADMIRABLE" CLASS

Name	No.	Launched
— (ex-USS *Prowess*, IX 305, ex-MSF 280, ex-*Ha Hoi*)	HQ 07	17 Feb 1944
— (ex-USS *Sentry*, ex-MSF 299)	—	1944

Displacement, tons: 650 standard; 945 full load
Dimensions, feet (metres): 184·5 × 33 × 9·75 *(56·3 × 10 × 3)*
Guns: 1—3 in *(76 mm)*/50; 2—40 mm (single); up to 8—20 mm (twin)
A/S weapons: 1 fixed Hedgehog; DCs
Main engines: Diesels (Cooper Bessemer); 1 710 bhp; 2 shafts = 14 knots
Complement: Approx 80

Former US Navy minesweepers of the "Admirable" class (originally designated AM). Built by Gulf S.B. Corp, Chicasaw, Alabama.
Transferred to South Viet-Nam in 1970. Minesweeping equipment has been removed and two depth charge racks fitted on fantail; HQ 07 employed in patrol and escort roles. Second ship probably non-operational.

LIGHT FORCES

8 Ex-SOVIET "OSA II" CLASS (FAST ATTACK CRAFT—MISSILE)

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (twins)
Main engines: 3 M504 diesels; 15 000 shp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Transferred: two in October 1979, two in September 1980, two in November 1980 and two in February 1981.

8 Ex-SOVIET "SHERSHEN" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (twins)
A/S weapons: 12 DCs
Torpedo tubes: 4—21 in *(533 mm)*
Main engines: 3 diesels; 3 shafts; 12 000 hp = 40 knots
Range, miles: 450 at 34 knots
Complement: 21

Transferred: two in April 1979 (without torpedo tubes), two in September 1979, two in August 1980 and two in October 1980.

4 Ex-SOVIET "SO 1" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 170 standard; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (2 twin mountings)
A/S weapons: 4—5-barrelled MBU
Mines: 12
Main engines: 3 diesels; 7 500 hp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Transferred: two in March 1980 and two in September 1980.

6 Ex-SOVIET "ZHUK" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 60
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 4—14·5 mm (twins)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

Transferred: three in 1978 and three in November 1979.

2 Ex-SOVIET "PO 2" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 50 full load
Dimensions, feet (metres): 82 × 16·7 × 5·6 *(25 × 5·1 × 1·7)*
Guns: 2—25 mm
Main engines: 2 diesels = 30 knots

Transferred in February 1980.

AMPHIBIOUS FORCES

3 Ex-SOVIET "POLNOCHNIY" CLASS (LSM)

Displacement, tons: 790 standard; 850 full load
Dimensions, feet (metres): 249·3 × 29·2 × 5·8 *(76 × 8·9 × 1·8)*
Guns: 2 or 4—30 mm (twins); 2—140 mm rocket launchers
Main engines: 2 diesels; 5 000 shp = 18 knots
Complement: 40

Of the "Polnochniy B" class. Transfers: one in May 1979, one in November 1979 and one in February 1980.

1 Ex-US "LST 1-510" and 3 Ex-US "LST 511-1152" CLASSES

— (ex-USS *Bulloch County* LST 509)
— (ex-USS *Cochino County* LST 603)
— (ex-USS *Maricopa County* LST 938) +1

Displacement, tons: 2 366 beaching; 4 080 full load
Dimensions, feet (metres): 328 × 50 × 14 *(100 × 15·2 × 4·3)*
Guns: 7 or 8—40 mm (1 or 2 twin; 4 or 5 single); several 20 mm
Main engines: General Motors diesels; 1 700 bhp; 2 shafts = 11 knots
Complement: 110

Built in 1943-44. Transferred to South Viet-Nam in mid-1960s.

MISCELLANEOUS

1 Ex-SOVIET "YURKA" CLASS (MINESWEEPER—OCEAN)

Displacement, tons: 400 standard; 460 full load
Dimensions, feet (metres): 170·6 × 30·5 × 6·6 *(52 × 9·3 × 2)*
Guns: 4—30 mm (twins)
Mines: 10
Main engines: 2 diesels; 2 shafts; 4 000 bhp = 18 knots
Range, miles: 1 100 at 18 knots
Complement: 45

Transferred December 1979.

1 Ex-SOVIET "SHELON" CLASS (TRV)

Displacement, tons: 200
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Main engines: Diesels = 25 knots
Complement: 20

Transferred 1978.

1 Ex-SOVIET "KAMENKA" CLASS (SURVEY SHIP)

Displacement, tons: 700 full load
Dimensions, feet (metres): 180·5 × 31·2 × 8·5 *(55·1 × 9·5 × 2·6)*
Main engines: 2 diesels; 2 shafts; cp propellers; 1 800 hp = 14 knots

Transferred December 1979.

NON-OPERATIONAL SHIPS

LIGHT FORCES

3 Ex-SOVIET "KOMAR" CLASS (FAST ATTACK CRAFT—MISSILE)

Transferred in late 1960s.

3 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

Transferred in 1967.

3 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Transferred 1961-64.

2 Ex-SOVIET "POLUCHAT I" CLASS (COASTAL PATROL CRAFT)

8 Ex-CHINESE "SHANGHAI II" CLASS (FAST ATTACK CRAFT—GUN)

Transferred: four in 1966 and four in 1968.

14 Ex-CHINESE "SWATOW" CLASS (FAST ATTACK CRAFT—GUN)

Transferred in early 1960s.

4 Ex-CHINESE "WHAMPOA" CLASS (RIVER PATROL CRAFT)

Transferred in mid-1960s.

18 Ex-US "PGM 59" (11) and "71" (7) CLASSES (LARGE PATROL CRAFT)

Transferred to South Viet-Nam 1963-67.

25 Ex-USCG 82 ft "POINT" CLASS (COASTAL PATROL CRAFT)

All originally manned by US Navy, transferred to South Viet-Nam in 1969-70.

99 Ex-US "SWIFT" CLASS (COASTAL PATROL CRAFT)

Transferred to South Viet-Nam 1969-70.

2 Ex-EAST GERMAN "BREMSE" CLASS

Transfer date unknown.

RIVERINE CRAFT

275 Ex-US "PBR Mk 2" CLASS

Transferred to South Viet-Nam 1968-70.

27 Ex-US "RPC" CLASS

Transferred to South Viet-Nam 1965-69.

58 Ex-US "ASPB" CLASS

Transferred to South Viet-Nam 1969-70.

21 Ex-US "CONVERTED LCM 3" CLASS

Transferred to South Viet-Nam 1965-70.

63 Ex-US "ATC (CONVERTED LCM 6)" CLASS

Transferred to South Viet-Nam 1965-70.

7 Ex-US "CCB" CLASS

Transferred to South Viet-Nam 1969-70.

30 Ex-US "MONITOR" CLASS

Transferred to South Viet-Nam 1969-70.

22 Ex-US "LCM" CLASSES

Of varying types transferred to South Viet-Nam in late 1960s.

34 Ex-FRENCH "STCAN/FOM 11" CLASS

Over 40 of these craft listed by South Viet-Nam in 1970.

26 Ex-FRENCH VEDETTES

Probably transferred in late 1950s.

MINE WARFARE FORCES

1 Ex-SOVIET "YEVGENYA" CLASS (MSI)

1 Ex-CHINESE "WUSUNG" CLASS

Reportedly transferred in 1974.

1 Ex-CHINESE "WOCHANG" CLASS

Possibly transferred mid-1970s.

1 Ex-CHINESE "YENKWAN" CLASS

Possibly transferred mid-1970s.

AMPHIBIOUS FORCES

3 Ex-US "LSM 1" CLASS

Transferred 1955 (one to France) to 1965.

2 Ex-US "LSIL 355" CLASS

Transferred to France in 1955 and later to South Viet-Nam.

1 Ex-US "LSSL 1" CLASS

Transferred to Japan 1953-64 and to South Viet-Nam 1965.

13 Ex-US "LCU 501" (1) and "LCU 1466" (12) CLASSES

Transferred to South Viet-Nam 1954-71, some having served briefly for the French.

27 Ex-SOVIET "T 4" CLASS (LCM)

Transferred in late 1960s.

38 Ex-US "LCM 8" and 84 Ex-US "LCM 6" CLASSES

Transferred to South Viet-Nam late 1960s.

2 Ex-CHINESE "LCM 6" CLASS

40 Ex-US "LCVP" CLASS

AUXILIARIES

8 CARGO SHIPS (AK)

All transferred by China.

6 TRANSPORT OILERS (AOT)

One transferred by China and two are converted ex-US "LST 1" class originally transferred to South Viet-Nam.

2 SALVAGE SHIPS (ARS)

One ex-Soviet "Neptun" class *(Ha Long)* and one ex-Chinese "Yeng Teng" class.

12 Ex-US TUGS

Three Medium Harbour Tugs and nine Small Harbour Tugs probably survive from those transferred to South Viet-Nam.

1 Ex-US SMALL FLOATING DRY DOCK

— (ex-AFDL —)

Of 1 000 tons capacity originally transferred to South Viet-Nam.

2 Ex-US FLOATING CRANES

Originally transferred to South Viet-Nam.

2 Ex-SOVIET "NYRYAT 2" CLASS (DIVING CRAFT)

3 Ex-US "YOG 5" CLASS (FUEL LIGHTERS)

Transferred to South Viet-Nam 1965-72.

75 SERVICE CRAFT

Of this miscellaneous group of craft handed over to South Viet-Nam about six floating workshops, two water-boats, two barracks barges, and some 65 lighters and barges of various types may still survive.

VIRGIN ISLANDS

An area of some 40 islands, large and small.

Administration

Chief of Police:
P. M. Grant

Base

Road Town, Tortola, Virgin Islands

1 BROOKE MARINE PATROL CRAFT

VIRGIN CLIPPER

Displacement, tons: 15
Dimensions, feet (metres): 40 × 12 × 4 *(12·2 × 3·7 × 1·2)*
Main engines: 2 diesels; 370 hp = 22 knots
Complement: 4

Standard Brooke Marine patrol craft attached to the Royal Virgin Islands Police Force. Carries small arms. Refit completed November 1980.

VIRGIN CLIPPER *1975, Virgin Islands Police Force*

2 "SEA EAGLE" LAUNCHES

Built by Coloso Boat Co. Of 23 ft with twin 55 hp Evinrude outboard engines. Acquired in 1980.

YEMEN ARAB REPUBLIC (North)

Personnel

(a) 1981: 300 officers and men
(b) 3 years' national service

Base

Hodeida

Mercantile Marine

Lloyd's Register of Shipping:
8 vessels of 2 979 tons gross

LIGHT FORCES

4 Ex-SOVIET "P 4" CLASS (FAST ATTACK CRAFT—TORPEDO)

Displacement, tons: 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2 MGs
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 shafts; 2 400 hp = 50 knots
Range, miles: 400 at 30 knots
Complement: 12

Transferred by the USSR in late 1960s.

2 Ex-SOVIET "ZHUK" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 60 full load
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 4—14·5 mm (twins)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

Transferred in 1978.

4 Ex-SOVIET "POLUCHAT" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 70 standard; 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 shafts; 2 400 shp = 20 knots
Range, miles: 460 at 17 knots
Complement: 15

Transferred 1970.

Note: In addition a dozen smaller patrol craft and two small landing craft have been reported.

YEMEN, People's Democratic Republic (South)

Personnel

(a) 1981: 750 officers and men
(b) 2 years' national service

Bases

Aden, Mukalla

Mercantile Marine

Lloyd's Register of Shipping:
32 vessels of 12 230 tons gross

LIGHT FORCES

2 Ex-SOVIET "OSA I" CLASS

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4 SS-N-2 (single launchers)
Guns: 4—30 mm (twins)
Main engines: 3 diesels; 3 shafts; 12 000 hp = 36 knots
Range, miles: 800 at 25 knots
Complement: 30

Transferred 1979.

2 Ex-SOVIET "P 6" CLASS (FAST ATTACK CRAFT—TORPEDO)

111 112

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85·3 × 20 × 4·9 *(26 × 6·1 × 1·5)*
Guns: 4—25 mm (twins)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 4 diesels; 4 shafts; 4 800 bhp = 41 knots
Range, miles: 450 at 30 knots
Complement: 20

Transferred 1971.

2 Ex-SOVIET "ZHUK" CLASS (FAST ATTACK CRAFT—PATROL)

Displacement, tons: 60 full load
Dimensions, feet (metres): 80·7 × 17 × 6·2 *(24·6 × 5·2 × 1·9)*
Guns: 4—14·5 mm (twin)
Main engines: 2 M50 diesels; 2 400 hp; 2 shafts = 34 knots
Complement: 17

Transferred February 1975.

2 Ex-SOVIET "SO I" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 170 standard; 215 full load
Dimensions, feet (metres): 137·8 × 19·7 × 5·9 *(42 × 6 × 1·8)*
Guns: 4—25 mm (twins)
A/S weapons: 4—5-barrelled MBUs
Main engines: 3 diesels; 7 500 shp; 3 shafts = 28 knots
Range, miles: 1 100 at 13 knots
Complement: 31

Transferred in April 1972.

1 Ex-SOVIET "POLUCHAT" CLASS (LARGE PATROL CRAFT)

Displacement, tons: 70 standard; 90 full load
Dimensions, feet (metres): 97·1 × 19 × 4·8 *(29·6 × 5·8 × 1·5)*
Guns: 2—14·5 mm (twin)
Main engines: 2 diesels; 2 shafts; 2 400 shp = 20 knots
Complement: 15

1 FAIREY MARINE "TRACKER 2" CLASS (COASTAL PATROL CRAFT)

Displacement, tons: 31
Dimensions, feet (metres): 63·1 × 16·3 × 4·8 *(19·3 × 5 × 1·5)*
Gun: 1—20 mm
Main engines: 2 MTU 8V 33-ITC diesels; 1 800 hp; 2 shafts = 29 knots
Range, miles: 650 cruising
Complement: 11

Delivered 1979.

4 FAIREY MARINE "SPEAR" CLASS (COASTAL PATROL CRAFT)

Dimensions, feet (metres): 29·8 × 9·2 × 2·6 *(9·1 × 2·8 × 0·8)*
Guns: 3—7·62 mm MGs
Main engines: 2 diesels; 290 hp = 25 knots

Three delivered 30 September 1975, one in 1978.

1 FAIREY MARINE "INTERCEPTOR" CLASS

Of 25 ft *(7·6 m)* with a catamaran hull. Can carry eight 25 man life-rafts or a platoon of troops. Twin 135 outboard motors = 30 knots. Delivered 27 July 1975.

AMPHIBIOUS FORCES

1 Ex-SOVIET "ROPUCHA" CLASS (LST)

Displacement, tons: 3 450 standard; 4 400 full load
Dimensions, feet (metres): 360 × 47·6 × 11·5 *(110 × 14·5 × 3·6)*
Guns: 4—57 mm (twins)
Main engines: 4 diesels; 10 000 shp; 2 shafts = 17 knots
Complement: 95

Built at Gdansk, Poland after 1975. Transferred 1979. A useful addition to the Soviet Indian Ocean squadron.

3 Ex-SOVIET "POLNOCHNIY" CLASS (LCT)

Displacement, tons: 780 standard; 800 full load
Dimensions, feet (metres): 239·5 × 29·2 × 5·8 *(73 × 8·9 × 1·8)*
Guns: 2—25 mm (twin); 2—18-barrelled 140 mm rocket launchers
Main engines: 2 diesels; 5 000 shp = 18 knots
Complement: 40

Can carry six tanks. Transferred in August 1973.

3 Ex-SOVIET "T 4" CLASS (LCVP)

Displacement, tons: 35 standard; 93 full load
Dimensions, feet (metres): 65·3 × 18·4 × 4·6 *(19·9 × 5·6 × 1·4)*
Main engines: 2 diesels; 2 shafts; 600 bhp = 10 knots
Range, miles: 1 500 at 10 knots
Complement: 4

Transferred November 1970.

1 "Z" LIGHTER

MINE WARFARE FORCES

1 Ex-SOVIET "T 58" CLASS (OCEAN MINESWEEPER)

Displacement, tons: 900 full load
Dimensions, feet (metres): 229·9 × 29·5 × 7·9 *(70·1 × 9 × 2·4)*
Guns: 4—57 mm (twins); 4—25 mm (twins)
A/S weapons: 2—MBU 1800; 2 DCTs
Main engines: 2 diesels; 4 000 shp; 2 shafts = 17 knots
Range, miles: 3 500 at 12 knots
Complement: 82

Transferred 1978.

3 Ex-BRITISH "HAM" CLASS (MSI)

JIBLA (ex-HMS *Bodenham, ex-Al Saqr*)
SOCOTRA (ex-HMS *Blunham, ex-Al Dairak*)
ZINGAHAR (ex-HMS *Elsenham, ex-Al Ghazala*)

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 106·5 × 21·2 × 5·5 *(32·4 × 6·5 × 1·7)*
Gun: 1—20 mm
Main engines: 2 Paxman diesels; 1 100 bhp = 14 knots
Oil fuel, tons: 15
Complement: 15 (2 officers, 13 ratings)

Transferred to the South Arabian Navy established by the Federal Government in 1967. All three were renamed after local islands in 1975. They must now be candidates for deletion.

YUGOSLAVIA

Ministerial

Federal Secretary for People's Defence:
General Nikola Ljubicic

Headquarters' Appointments

Chief of General Staff:
Admiral Branko Mamula
Head of Naval Department, State Secretariat for Defence:
Vice-Admiral Miodrag Radosavljević

Flag Officers

Commander-in-Chief and Commander of Split Naval Region:
Vice-Admiral Tihomir Vilović
Fleet Commander:
Rear-Admiral Božidar Grubšić

Diplomatic Representation

Defence Attaché in London:
Captain Stane Brovet
Naval, Military and Air Attaché in Moscow:
Colonel S. Krivokapic
Naval, Military and Air Attaché in Washington:
Colonel Milan Mavric

Personnel

(a) 1981: 14 000 (1 500 officers and 12 500 men)
(b) 15 months' national service

Bases and Organisation

Split Naval Region: Major commands are the Fleet, Pula Naval District (HQ at Pula), Sibenik Naval District (HQ at Sibenik), Boka Naval Sector (HQ at Kumbor).
River Flotilla (Novi Sad) under operational command of Belgrade Army Region.
Main bases: Lora/Split; Minor bases: Pula, Sibenik, Ploce, Gulf of Cattaro.

Naval Air Arm

ASW helicopter squadron (Divulje) was formed in 1974-75 and has a number of Ka-25 Hormones.
There is also an air-liaison detachment (Divulje) composed of a few Mi-8 and SA 341 (Gazelle) helicopters and DHC-2 Beavers.
The Air Force has a "Naval Cooperation Regiment" of 50 aircraft. These include RT 33 (reconnaissance), MiG 21 (fighters) and J 1 (Jastreb) (attack).

New Construction

As well as the new submarines, fast attack craft and LSTs it is reported that the first of a new class of surface ship, possibly of some 1 800 tons with two diesels and one Olympus gas turbine, is planned although funds are temporarily lacking.

Strength of the Fleet

Type	*Active*	*Building (Planned)*
Submarines—Patrol	7	—
Frigate	1	—
Corvettes	3	—
Fast Attack Craft—Missile	16	—
Fast Attack Craft—Torpedo	15	—
Large Patrol Craft	20	—
Minehunters	4	—
Minesweepers—Inshore	10	—
River Minesweepers	15	?
LST	—	1
LCTs/Minelayers	13	—
LCAs	21	?
Training Ships	2	(1)
Survey Ship	1	—
HQ Ships	2	—
Salvage Vessel	1	—
Tankers	6	—
Transports	10	—
Ammunition Transports	4	—
Tugs	12	—
Water Carriers	3	—

Mercantile Marine

Lloyd's Register of Shipping:
486 vessels of 2 466 574 tons gross

DELETIONS

Destroyer

1980 *Split*

Light Forces

1975 Two "Kraljevica" class to Bangladesh, one to Ethiopia
1978 14 "Type 158" (fast attack craft)
1979 Six "Type 158" (fast attack craft), one "Type 131" (large patrol craft)
1980 Four "Kraljevica" class, one "Type 131" (large patrol craft)

Amphibious Forces

1978 One "DTM 221" Type (LCT), two "M2" Type, Catamaran LCUs
1980 11 "DTM 211" Type (LCT)

Mine Warfare Forces

1980 One "M 117" class, 14 "M 301" class

Service Forces

1978 *Kit* and *Uljesura*
1979 *Jadranka*

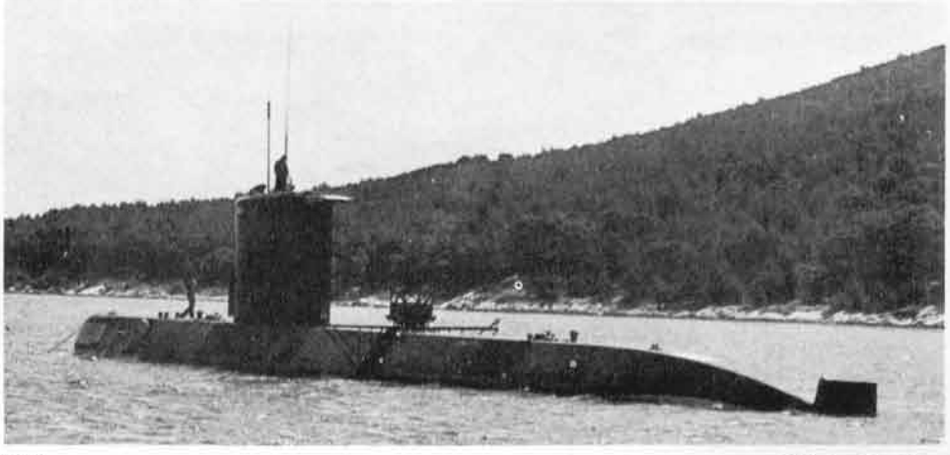
SUBMARINES

2 "SAVA" CLASS (PATROL SUBMARINES)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SAVA	831	S. and D.E. Factory, Split	1975	1977	1978
—	832	S. and D.E. Factory, Split	—	—	1979

Displacement, tons: 964 dived
Dimensions, feet (metres): 215·8 × 22·9 × 18 *(65·8 × 7 × 5·5)*
Torpedo tubes: 6—21 in *(533 mm)* (10 reloads or 20 mines)
Main machinery: Diesel-electric; 1 shaft
Speed, knots: 16·1 dived
Complement: 35

A new class of diesel propelled submarine with a diving depth of 1 000 ft. Have Soviet electronic equipment and armament.



SAVA *1979, Yugoslav Navy*

3 "HEROJ" CLASS (PATROL SUBMARINES)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
HEROJ	821	Uljanik Shipyard, Pula	1964	1967	1968
JUNAK	822	S. and D.E. Factory, Split	1965	1968	1969
USKOK	823	Uljanik Shipyard, Pula	1966	1969	1970

Displacement, tons: 1 068 dived
Dimensions, feet (metres): 210 × 23·6 × 16·4 *(64 × 7·2 × 5)*
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Main machinery: Diesels; electric motors; 2 400 hp; 1 shaft
Speed, knots: 16 surfaced; 10 dived
Complement: 55

Have Soviet electronic equipment and armament.

JUNAK *1972, S. and D.E. Factory, Split*

2 "SUTJESKA" CLASS (PATROL SUBMARINES)

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
SUTJESKA	811	Uljanik Shipyard, Pula	1957	28 Sep 1958	16 Sep 1960
NERETVA	812	Uljanik Shipyard, Pula	1957	1959	1962

Displacement, tons: 820 surfaced; 945 dived
Dimensions, feet (metres): 196·8 × 22·3 × 16·1 *(60 × 6·8 × 4·9)*
Torpedo tubes: 6—21 in *(533 mm)* (bow)
Main machinery: Diesels; electric motors; 1 800 hp
Speed, knots: 14 surfaced; 9 dived
Range, miles: 4 800 at 8 knots
Complement: 38

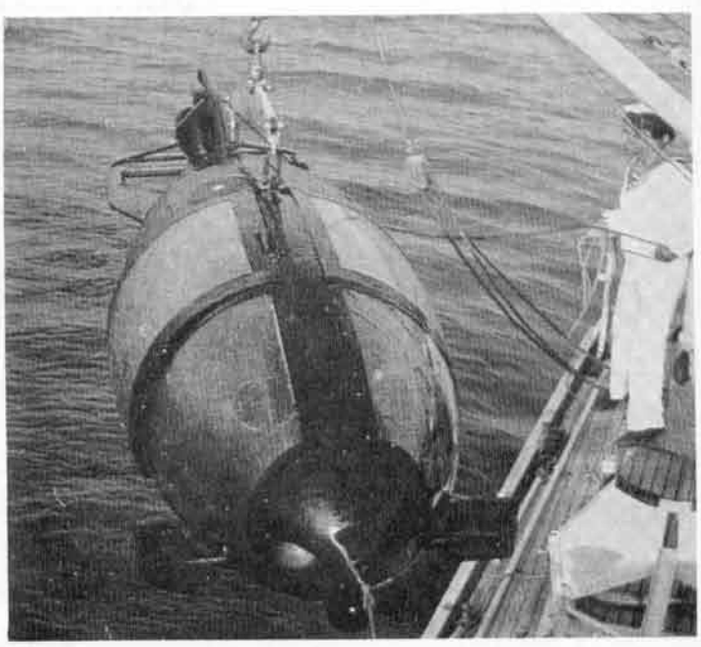
The first class of submarines to be built in a Yugoslav yard. Were later modernised and received Soviet electronic equipment and armament.

NERETVA *1969, Dr. Giorgio Arra*

"MALA" CLASS (2 MAN SUBMARINES)

Dimensions, feet (metres): 25 × 6 approx *(7·6 × 1·8)*
Main motor: 1 electric motor; single screw
Complement: 2

This is a free-flood craft with the main motor, battery, navigation-pod and electronic equipment housed in separate watertight cylinders. Constructed of light aluminium it is fitted with fore- and after-hydroplanes, the tail being a conventional cruciform with a single rudder abaft the screw. Large perspex windows give a good all-round view.



"MALA" Class *1973, S. and D.E. Factory, Split*

FRIGATE

1 SOVIET " KONI" CLASS

SPLIT R 31

Displacement, tons: 1 700 standard; 2 000 full load
Dimensions, feet (metres): 311·6 × 39·3 × 13·7
(95 × 12 × 4·2)
Missiles: SAM; 1 twin SA-N-4
Guns: 4—3 in *(76 mm)* (twins); 4—30 mm (twins)
A/S weapons: 2—12-barrelled MBU 6000
Mines: Can lay mines
Main engines: CODAG; 2 diesels (outer shafts); 12 000 shp
1 gas turbine (centre shaft); 30 000 shp
Speed, knots: 32 (gas); 22 (diesel)
Range, miles: 2 000 at 14 knots
Complement: 110

Transferred February 1980.

Radar: Search: Strut Curve.
Fire control: Owl Screech; Drum Tilt; Muff Cob; Pop Group.

Sonar: Hull-mounted.

SPLIT *1980, Yugoslav Navy*

CORVETTES

2 "MORNAR" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
MORNAR	PBR 551	Tito S.Y., Kraljevica	1957	1958	10 Sep 1959
BORAC	PBR 552	Tito S.Y., Kraljevica	1964	1965	1965

Displacement, tons: 330 standard; 430 full load
Dimensions, feet (metres): 174·8 × 23 × 6·6 *(53·3 × 7 × 2)*
Guns: 1—76 mm; 2—40 mm (single); 3—20 mm (triple, aft)
A/S weapons: 4 MBU 1200; 2 DCTs; 2 DC racks
Main engines: 4 SEMT-Pielstick diesels; 2 shafts; 3 240 bhp
Speed, knots: 20
Range, miles: 3 000 at 12 knots; 2 000 at 15 knots
Complement: 60

The design is an improved version of that of *Udarnik*.
Modernised in 1970-73 at Naval repair yard, "Sava Kovacevic", Tivat, Gulf of Cattaro.
Probably now fitted with Soviet sonar equipment.

Type name: Patrolni Brod.

BORAC (before modernisation) *Commander Aldo Fraccaroli*

1 "LE FOUGUEUX" CLASS

Name	*No.*	*Builders*	*Laid down*	*Launched*	*Commissioned*
UDARNIK *(ex-P 6)*	PBR 581	F.C. Mediterranee (Le Havre)	1954	1 June 1954	1955

Displacement, tons: 325 standard; 400 full load
Dimensions, feet (metres): 173·9 × 24 × 10·2 *(53 × 7·3 × 3·1)*
Guns: 2—40 mm; 2—20 mm
A/S weapons: 1 Hedgehog; 4 DCTs; 2 DC racks
Main engines: 4 SEMT-Pielstick diesels; 3 240 bhp = 18·7 knots
Range, miles: 3 000 at 12 knots; 2 000 at 15 knots
Complement: 46

USA offshore procurement.

UDARNIK *1972, Yugoslav Navy*

LIGHT FORCES

Note: Eight craft of an undetermined type or class are reported to be under construction or planned.

6 "RADE KONCAR" CLASS ("211" TYPE) (FAST ATTACK CRAFT—MISSILE)

Name	*No.*	*Builders*	*Commissioned*
RADE KONCAR	401	Tito S.Y., Kraljevica	Apr 1977
VLADO CETKOVIC	402	Tito S.Y., Kraljevica	Mar 1978
RAMIZ SADIKO	403	Tito S.Y., Kraljevica	Aug 1978
HASAN ZAHIROVIC LACA	404	Tito S.Y., Kraljevica	Dec 1978
ORCE NIKOLOV	405	Tito S.Y., Kraljevica	Aug 1979
ANTE BANINA	406	Tito S.Y., Kraljevica	Nov 1980

Displacement, tons: 240 full load
Dimensions, feet (metres): 147·6 × 27·6 × 8·2 *(45 × 8·4 × 2·5)*
Missiles: SSM; 2—SS-N-2
Guns: 2 Bofors 57 mm/L 70
Main engines: 2 Rolls-Royce Proteus gas turbines; 9 600 shp; 2 MTU diesels; 7 200 shp
Speed, knots: 40
Range, miles: 500 at 35 knots
Complement: 30

Designed by the Naval Shipping Institute in Zagreb based on Swedish "Spica" class with bridge amidships like Malaysian boats. *Rade Koncar* launched 16 October 1976. *Vlado Cetkovic* launched 28 August 1977.

Radar: Philips TAB in radome.

Type name: Raketna Topovnjaca.

RADE KONCAR *1978, Front*

10 Ex-SOVIET "OSA I" CLASS (FAST ATTACK CRAFT—MISSILE)

M. ACEV RC 301
V. BAGAT RC 302
P. DRAPSIN RC 303
S. FILIPOVIC RC 304
V. SKORPIK RC 305
N. MARTINOVIC RC 306
J. M. SOSA RC 307
K. ROJC RC 308
F. ROZMAN-STANE RC 309
Z. JOVANOVIC-SPANAC RC 310

Displacement, tons: 160 standard; 210 full load
Dimensions, feet (metres): 127·9 × 26·6 × 5·9 *(39 × 8·1 × 1·8)*
Missiles: SSM; 4—SS-N-2 (single launchers)
Guns: 4—30 mm (2 twin, 1 fwd, 1 aft)
Main engines: 3 diesels; 12 000 bhp = 36 knots
Fuel, tons: 40
Range, miles: 800 at 25 knots
Complement: 30 (4 officers, 26 men)

Acquired between 1965 and 1969.

Names: Named after war heroes.

Radar: Search: Square Tie.
Fire control: Drum Tilt.
IFF: High Pole.

Type name: Raketni Camac.

K. ROJC *1972*

15 Ex-SOVIET "SHERSHEN" CLASS ("201" TYPE) (FAST ATTACK CRAFT—TORPEDO)

TOPCIDER TC 211
PIONIR TC 214
JADRAN TC 216
CRVENA ZVIJEZDA TC 220
BIOKOVAK TC 221
PARTIZAN II TC 222
IVAN
KORNAT
PARTIZAN
PROLETER
STRELJKO
+ 4

Displacement, tons: 145 standard; 160 full load
Dimensions, feet (metres): 118·1 × 25·3 × 4·9 *(36 × 7·7 × 1·5)*
Guns: 4—30 mm (2 twin)
Torpedo tubes: 4—21 in *(533 mm)* (single)
A/S weapons: 12 DCs
Mines: 4-6
Main engines: 3 diesels; 3 shafts; 12 000 bhp = 40 knots
Fuel, tons: 30
Range, miles: 450 at 34 knots
Complement: 21

Four craft (TC 211, 212, 215, 216) acquired from USSR, 1965. Remainder built under licence by Tito Shipyard, Kraljevica between 1966 and 1971.

Names: Named after partisan craft of World War II.

Radar: Search: Pot Head.
Fire control: Drum Tilt.
IFF: High Pole.

Type name: Torpedni Camac.

BIOKOVAK *1980*

10 "KRALJEVICA" CLASS ("501" and "509" TYPES) (LARGE PATROL CRAFT)

NAPRED 504, **JUNAK** 506, **508 ("501" Type)**

MIRAN 519, **STREJKO** 520, **MARIJAN** 521, **PROLETER** 524, **509, 510, 512, ("509" Type)**

Displacement, tons: 180 standard; 202 (full load) ("501" Type); 195; 245 ("509" Type)
Dimensions, feet (metres): 134·5 × 20·7 × 5·5 *(41 × 6·3 × 1·7)* ("501" Type)
141·4 × 20·7 × 5·7 *(43·1 × 6·3 × 1·8)* ("509" Type)
Guns: 1—40 mm; 4—20 mm ("501" Type);
1—3 in *(76 mm)* US Mk 22; 1—40 mm; 4—20 mm ("509" Type)
A/S weapons: 2 Mousetraps (or 1 Hedgehog); 2 DCTs; 2 DC Racks
Main engines: 2 diesels; 2 shafts; 3 000 bhp = 17 knots ("501" Type);
3 300 bhp = 19 knots ("509" Type)
Range, miles: 1 500 at 12 knots
Complement: 45 ("501" Type); 49 ("509" Type)

Built at Tito SY, Kraljevica—"501" Type 1953-56 and "509" Type 1957-59.

Modernisation: Two MBU 1200 being fitted as elderly 3-in guns are replaced by extra 40 mm. All export models have this 40 mm shipped.

Radar: Search: Decca 45.

Sonar: QCU 2.

Transfers: Six to Indonesia in 1959 (built as separate order); two to Sudan in 1969; one to Ethiopia in 1975; two to Bangladesh in 1975.

"KRALJEVICA" Class *Yugoslav Navy*

10 TYPE 131 (LARGE PATROL CRAFT)

KALNIT PC 132
TRIGLAV PC 135
LOVCEN PC 136
DURMITOR PC 139
BRESICE
CER
GRANICA
KAMENAR
KOZUF
ROMANIJA

Displacement, tons: 85 standard; 120 full load
Dimensions, feet (metres): 91·9 × 14·8 × 8·3 *(28 × 4·5 × 2·5)*
Guns: 6—20 mm (triple Hispano-Suiza HS 831 mounts)
Main engines: 2 diesels; 900 bhp = 15 knots

Built at Trogir S.Y. between 1965 and 1968. Serve in Maritime Border Brigade.

Pennant numbers: From 131 to 140.

Type name: Patrolni Camac.

Type 131 *1968, Yugoslav Navy*

MINE WARFARE FORCES

4 "VUKOV KLANAC" CLASS (MINEHUNTERS)

Name	*No.*	*Builders*	*Commissioned*
VUKOV KLANAC (ex-*Hrabri*)	M 151 (ex-D 25)	A. Normand, France	Sep 1957
PODGORA (ex-*Smeli*)	M 152 (ex-D 26)	A. Normand, France	Sep 1957
BLITVENICA (ex-*Slobodni*)	M 153 (ex-D 27)	A. Normand, France	Sep 1957
GRADAC (ex-*Snazni*)	M 161	Mali Losinj SY, Yugoslavia	1960

Displacement, tons: 365 standard; 424 full load
Dimensions, feet (metres): 152 × 28 × 8·2 *(46·4 × 8·6 × 2·5)*
Guns: 2—20 mm
Main engines: SIGMA free piston generators; (gas turbines in *Gradac*);
2 shafts; 2 000 bhp = 15 knots
Oil fuel, tons: 48
Range, miles: 3 000 at 10 knots
Complement: 40

The first three were built as US "off-shore" orders. *Gradac* (ex-*Snazni*) was built in Yugoslavia in 1960 with French assistance. Sonar ordered from Plessey Ltd in January 1980—conversion 1980-81.

Sonar: Type 193M.

BLITVENICA *1966, Yugoslav Navy*

6 "M 117" CLASS (MINESWEEPERS—INSHORE)

MAUN M 118 **M 120-123** **M 117** (see note)

Displacement, tons: 120 standard; 131 full load
Dimensions, feet (metres): 98·4 × 18 × 4·9 *(30 × 5·5 × 1·5)*
Guns: 1—40 mm; 2—12·7 mm MGs
Main engines: 2 General Motors diesels; 1 000 bhp = 12 knots
Complement: 25

Built in Yugoslav shipyards between 1966 and 1968. *M 117* used for surveying.

M 121 *1968, Yugoslav Navy*

4 BRITISH "HAM" CLASS (MINESWEEPERS—INSHORE)

— M 141 **BRSEC** M 142 **IZ** M 143 **OLIB** M 144

Displacement, tons: 120 standard; 159 full load
Dimensions, feet (metres): 106·5 × 21·3 × 5·5 *(32·5 × 6·5 × 1·7)*
Guns: 2—20 mm (twin)
Main engines: 2 Paxman diesels; 1 100 bhp = 14 knots
Range, miles: 2 000 at 9 knots
Complement: 22

Built in Yugoslavia 1964-66 under the US Military Aid Programme.

BRSEC *1968, Yugoslav Navy*

5 + ? "NESTIN" CLASS (RIVER MINESWEEPERS)

Name	*No.*	*Builders*	*Commissioned*
NESTIN	M 331	Brodotehnika, Belgrade	20 Dec 1975
MOTAJICA	M 332	Brodotehnika, Belgrade	18 Dec 1976
BELEGIS	M 333	Brodotehnika, Belgrade	Jan 1977
—	M 334	Brodotehnika, Belgrade	1978
—	M 335	Brodotehnika, Belgrade	1979

Displacement, tons: 65
Dimensions, feet (metres): 88·6 × 20·7 × 5·2 *(27 × 6·3 × 1·6)*
Guns: 3—20 mm Hispano (triple, aft)
Main engines: 2 diesels; 520 bhp = 15 knots

Possibly a continuing programme. A sixth may now be in service.

"NESTIN" Class *1980, Front*

10 "M 301" CLASS (RIVER MINESWEEPERS)

M 315-324

Displacement, tons: 38
Guns: 2—20 mm
Main engines: Speed = 12 knots

All launched in 1951-53. Serve on the Danube. Being phased out.

"M 301" Class *1978, Front*

AMPHIBIOUS FORCES

NEW CONSTRUCTION (LST)

Displacement, tons: 2 980
Dimensions, feet (metres): 334·6 × 46·6 × 10·2 *(102 × 14·2 × 3·1)*
Guns: 2—40 mm
Main engines: 2 Pielstick diesels; 6 800 shp

A new class capable of carrying six tanks, a number of LCAs and fitted with a helicopter deck now being built in Yugoslavia. Of merchant ship appearance—apparently LCAs are hoisted out by derricks.

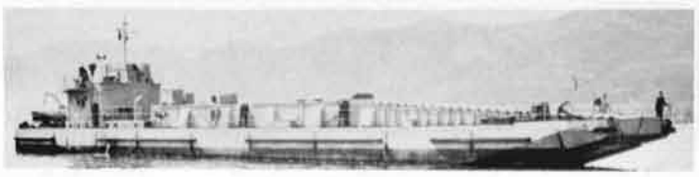
13 "DTM 211" TYPE (LCT/MINELAYERS)

DTM 210, 213, 214-6, 219, 221, 228-9, 232-4, 237

Displacement, tons: 410
Dimensions, feet (metres): 155·1 × 21 × 7·5 *(47·3 × 6·4 × 2·3)*
Guns: 2—12·7 mm
Mines: Can carry 100
Speed, knots: 9
Complement: 15

Capable of carrying at least two, possibly three of the heaviest tanks. Unlike other tank landing craft in that the centre part of the bow drops to form a ramp down which the tanks go ashore, the vertical section of the bow being articulated to form outer end of ramp. Built in Yugoslavia. Can also act as minelayers.

Transfers: Two to Sudan in 1969.



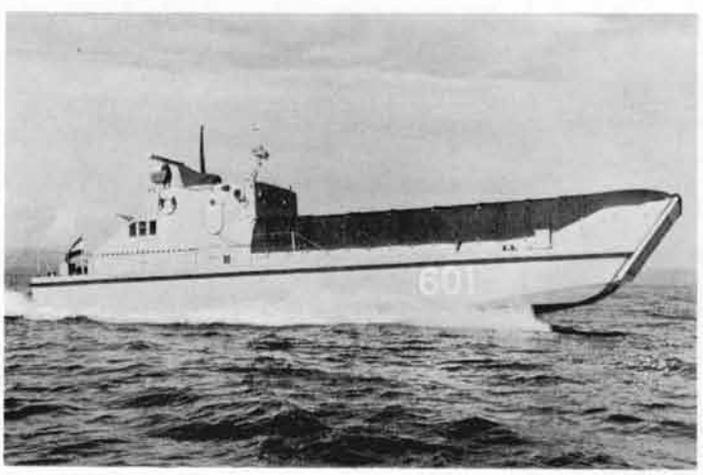
"DTM 211" Type *B. Hinchcliffe*

21 + ? "601" TYPE (LCA)

DJC 601-621

Displacement, tons: 32
Dimensions, feet (metres): 70·2 × 15·1 × 2 *(21·4 × 4·6 × 0·6)*
Gun: 1—20 mm
Main engines: Diesels; 1 125 shp = 22 knots

A programme is under way for the construction of a considerable number of LCAs built of polyester and glass fibre. Probably to be carried in the new class of LSTs. First in service September 1976, second 1977; 612 in service June 1978.



DJC 601 *1979, Yugoslav Navy*

MISCELLANEOUS

Note: One 1 850 tonnes Training Ship design is under construction for Indonesia and one has been completed for Iraq. It is not known if the Yugoslav navy intends to build one of this class although this seems unlikely.

TRAINING SHIPS

1 "GALEB" CLASS

Name	*No.*	*Builders*	*Commissioned*
GALEB (ex-*Kuchuk*, ex-*Ramb III*)	M 11	Ansaldo, Genoa	1939

Displacement, tons: 5 182 standard
Measurement, tons: 3 667 gross
Dimensions, feet (metres): 384·8 × 51·2 × 18·4 *(117·3 × 15·6 × 5·6)*
Main engines: 2 diesels; 2 shafts; 7 200 bhp
Speed, knots: 17

Ex-Italian. Launched in 1938. Sunk as an auxiliary cruiser in 1944, refloated and reconstructed in 1952. Serves as fleet flagship, Presidential Yacht and training ship. Former armament was four 3·5-in, four 40 mm and 24—20 mm (six quadruple) guns. The guns were landed. Can act as minelayer.

GALEB *1976, Dhr J. van der Woude*

JADRAN (ex-*Marco Polo*)

Displacement, tons: 720
Dimensions, feet (metres): 190 × 29·2 × 13·8 *(58 × 8·9 × 4·2)*
Sail area: 8 600 sq ft *(800 sq m)*
Main engine: 1 Linke-Hofman diesel; 375 hp_e = 8 knots

Topsail schooner. Built by Blohm and Voss, Hamburg. Served in Italian navy during World War II *(Marco Polo)*. Launched in 1932. Accommodation for 150 Cadets.

HEADQUARTERS SHIPS

KOZARA

Former Presidential Yacht on Danube. Now acts as flagship of the river flotilla.

VIS

Built in 1956. Serves as flagship of missile boat brigade.

SURVEY SHIP

Name	*No.*	*Builders*	*Commissioned*
ANDRIJA MOHOROVICIC	PH 33	Gdansk Shipyard, Poland	1972

Displacement, tons: 1 200 standard; 1 700 full load
Dimensions, feet (metres): 219·8 × 34·4 × 13·1 *(67 × 10·5 × 4)*
Main engines: 2 diesels; 3 000 hp = 15 knots
Complement: 37

Built in 1971 at the shipyard in Gdansk, Poland, and added to the Yugoslav Navy List in 1972. Of Soviet "Moma" class.

ANDRIJA MOHOROVICIC *1980, Yugoslav Navy*

SALVAGE VESSEL

SPASILAC PS 12

Displacement, tons: 1 300
Dimensions, feet (metres): 182 × 37·6 × 12·2 *(55·5 × 11·5 × 3·8)*
Main engines: 2 diesels; 2 shafts; 4 500 hp = 15 knots
Range, miles: 1 700 cruising
Complement: 50

New construction to replace ship of same name which was built in Kiel in 1929-30 and is now deleted. Built at Tito SY, Belgrade. In service 10 September 1976. Fitted for fire-fighting.

SPASILAC *1979, Yugoslav Navy*

TANKERS

2 "PN 24" TYPE (HARBOUR TANKERS)

PN 24 **PN 25**

Built at Split in mid-1950s.

4 "PN 13" TYPE (HARBOUR TANKERS)

PN 13 (ex-*Lovcen*) **PN 14** **PN 15** **PN 16**

Displacement, tons: 695 standard
Speed, knots: 8·5

PN 13 (ex-*Lovcen*) was launched in 1932. PN 17 was transferred to the Sudanese Navy in 1969.

TRANSPORTS

4 "PT 71" TYPE

PT 71—PT 74

Displacement, tons: 310 standard; 428 full load
Dimensions, feet (metres): 152·2 × 23·6 × 17·1 *(46·4 × 7·2 × 5·2)*
Main engines: 300 bhp = 7 knots

Built in 1953.

6 "PT 61" TYPE

PT 61—66

Built at Pula and Sibenik 1951-54.

4 "PO" TYPE (AMMUNITION TRANSPORTS)

PO 52—55

Of 600 tons.

TUGS

4 COASTAL TUGS

PR 37—40

Speed, knots: 11
Type name: PR = Pomorski Remorker.

8 HARBOUR TUGS

LR 67—74

Displacement, tons: 130
Type name: LR = Lucki Remorker.

WATER CARRIERS

PV 11 **PV 12** **PV 13**

Of various types and of modern construction.

ZAIRE

Ministerial

State Commissioner for Defence:
Lieutenant-General Mobuto Sese Seko (President)

Senior Officer

Commander-in-Chief Navy:
Admiral Lomponda wa Botende

Personnel

(a) 1981: 1 500 officers and men (including 600 marines)
(b) Voluntary service

Bases

Matadi (Lake Tanganyika)
Kalemie, Kinshasa, Banana

Organisation

Three flotillas—one lake, one river, one coastal.

Mercantile Marine

Lloyd's Register of Shipping:
33 vessels of 91 894 tons gross

LIGHT FORCES

4 Ex-CHINESE "SHANGHAI II" CLASS

101-104

Displacement, tons: 120 standard; 155 full load
Dimensions, feet (metres): 128 × 18 × 5·6 *(39 × 5·5 × 1·7)*
Guns: 4—37 mm (twin); 4—25 mm (twin)
Note: In some boats a twin 75 mm recoilless rifle is mounted forward
A/S weapons: 8 DCs
Mines: Minerails can be fitted for 10 mines
Main engines: 4 diesels; 4 800 bhp = 30 knots
Complement: 25

Transferred in September 1976 (first pair) with two more in September 1978.

4 Ex-CHINESE "HUCHUAN" CLASS

Displacement, tons: 39 full load
Dimensions, feet (metres): 71·5 × 16·6 oa × 3·3 (hullborne) *(21·8 × 5 × 1)*
Guns: 4—14·5 mm (twin)
Torpedo tubes: 2—21 in *(533 mm)*
Main engines: 3 M50 12-cyl diesels; 2 shafts; 3 600 hp = 50+ knots in calm conditions
Range, miles: 500 cruising

Transferred 1978-79.

1 COASTAL PATROL CRAFT

ZAIRE (ex-*President Mobuto*, ex-*General Olsen*, ex-*Congo*)

A 70 ton craft, the first in this naval force.

10 SEWART TYPE (COASTAL PATROL CRAFT)

Displacement, tons: 33
Dimensions, feet (metres): 65 × 16·3 × 5 *(19·8 × 4·9 × 1·5)*
Guns: 6 MGs
Main engines: 2 General Motors diesels; 1 600 shp = 25 knots
Range, miles: 1 000 at 18 knots

Purchased in the USA in 1971 (first six) and four more later.

3 Ex-NORTH KOREAN "P 4" CLASS

Displacement, tons: 25 full load
Dimensions, feet (metres): 62·3 × 10·8 × 3·3 *(19 × 3·3 × 1)*
Guns: 2—14·7 mm MGs
Torpedo tubes: 2—18 in *(457 mm)*
Main engines: 2 M50 diesels; 2 shafts; 2 200 hp = 50 knots
Range, miles: 400 at 13 knots
Complement: 12

Transferred 1974.

10 COASTAL PATROL CRAFT

Ordered in 1974 in France and delivered by Arcoa.

8 Ex-US COASTAL PATROL CRAFT

First purchased in 1971. Of same type as Swiftboats.

ZANZIBAR

(see also Tanzania)

Although part of the United Republic of Tanzania, Zanzibar retains a separate Executive and Legislature, the President of Zanzibar being First Vice-President of Tanzania.

4 VOSPER THORNYCROFT 75 ft TYPE

Displacement, tons: 70
Dimensions, feet (metres): 75 × 19·5 × 8 *(22·9 × 6 × 2·4)*
Guns: 2—20 mm
Main engines: 2 diesels; 1 840 hp
Speed, knots: 24·5
Range, miles: 800 at 20 knots
Complement: 11

This was one of the first orders for the new Keith Nelson 75 ft craft. First pair delivered 6 July 1973, second pair 1974.

75 ft Type

1974, Vosper Thornycroft

ADDENDA

ARGENTINA

Second Meko 360 frigate to be named *La Argentina*.
First "Type 1700" submarine, *Santa Cruz*, laid down at Emden late 1980 (page 24).
"Meko 1470" type ordered 2 October 1980. To be named "Espora" class (page 28).
Cargo ship *Isla de los Estados* (ex-Spanish MV *Trans-Betica*) commissioned in Argentine Navy 22 December 1980. Built in 1975 by Soc. Met. Duro Felguera, Gijon:
Measurement, tons: 1 541 gross; 2 684 deadweight
Dimensions, feet (metres): 266·7 × 44 × 18·7 *(81·3 × 13·4 × 5·7)*
Main engine: Deutz diesel; 2 940 bhp = 14 knots

AUSTRALIA

Warrnambool commissioned on 14 March and *Tobruk* commissioned 21 March 1981.

BANGLADESH

Plans to order six 30-metre coastal patrol craft.

BRAZIL

Paraiba (ex-USS *Bennett* DD 473), *Rio de Janeiro* (ex-USS *Odax* SS 484) and *Rio Grande do Sol* (ex-USS *Grampus* SS 523), all paid off in 1978 to be sold for scrap in 1981.
Para (ex-USS *Guest* DD 472) to be sunk as missile target in 1981.
Seventh "Niteroi" class particulars as training ship:
Displacement, tons: 2 333 light; 3 345 full load
Dimensions, feet (metres): 430·7 × 44·3 × 13·8 *(131·3 × 13·5 × 4·2)*
Guns: 1—76 mm OTO-Melara; 4 saluting guns
Main engines: 2 diesels; 2 shafts = 19 knots
Range, miles: 6 000 at 15 knots

Training ship *Aspirante Nascimento* (page 66, corrected name) commissioned December 1980. Two sister ships, *Guarda Marinha Jensen* and *Guarda Marinha Brito* to commission in 1981.

CANADA

The two competing consortia for the new frigates are Scanmarine with a Netherlands Standard design and St John SB with Sperry offering a FFG 7 variant. The main particulars of requirement are:
less than 4 000 tons; COGOG, CODOG or COGAG; SSMs (± 30 miles); PDMS; 76 mm or larger gun, CIWS; ASW torpedoes; hangar and Beartrap for one Sea King; probably TACTAS and no VDS; complement 200 to 225.
Prototype might be ordered in 1982.
Delex programme to add 8-12 years to destroyers'/frigates' lives:-
"St Laurent" class; hull repairs, machinery refit, new navigation radar.
"Mackenzie" class; as "St Laurent" with new sonar and communications and modification to SPS 12 search radar.
"Improved Restigouche" class; as "St Laurent" class with new EW equipment, modifications to GFCS and new air warning radar.
"Annapolis" class; as "St Laurent" class with new sonar, air-warning radar, modified SPS 12 radar and GFCS, new EW equipment and communications.
Time scale and cost:
"St Laurent" class: to complete by end 1982. $5 million each.
"Mackenzie" class: 1982-85. $12 million each.
"Improved Restigouche" class: 1983-86. $22 million each.
"Annapolis" class: 1982-84. $24 million each.
The "DD 280" class requirement is to be reviewed in the second half of the 1980s.

CHILE

Second Israeli "Saar 4" class transferred in February 1981. *Chipana* (ex-*Keshet*). Both craft armed with six Gabriel missiles.
Range revised to 1 500 miles at 30 knots or 3 600 miles at 17·5 knots.
Third yet to be transferred.
Prat CL 03, *Blanco Encalada* DD 14 and *Cochrane* DD 15 due to be paid off in late 1981.
Two Maclaren CPCs, *Rano Kau* and *Villarrica* delivered December 1980 (page 97).

CHINA

Revision of particulars for "Jianghu" class frigates (page 103):
Displacement, tons: 1 568 standard
Dimensions, feet (metres): 338·5 × 33·5 × 10·2 *(103·2 × 10·2 × 3·1)*
Main engines: 2 diesels; 2 shafts; 16 000 bhp = 25·5 knots
Revision for "Hainan" class (page 106):
Displacement, tons: 375 standard
Dimensions, feet (metres): 192·9 × 23·6 × 7·2 *(58·8 × 7·2 × 2·2)*
Main engines: 4 diesels; 4 shafts; 8 800 bhp = 30·5 knots
Revision of "Shanghai II" class (page 106):
Displacement, tons: 122·5 standard
Dimensions, feet (metres): 127·3 × 17·7 × 4·9 *(38·8 ×5·4 × 1·5)*
Main engines: 2 diesels; 2 400 hp; 2 diesels; 1 820 hp = 28·5 knots
Revision of Space Event Ships (*Yuan Wang 1* and *2*) (page 109):
Displacement, tons: 17 100
Dimensions, feet (metres): 623·2 × 74·1 × 24·6 *(190 × 22·6 × 7·5)*
Speed, knots: 20
New particulars for Research Ship *Xiang Hong 10* (page 110):
Displacement, tons: 10 975
Dimensions, feet (metres): 512·3 × 67·6 × 22·3 *(156·2 × 20·6 × 6·8)*
Speed, knots: 20
New air cushion vehicle (possibly naval):
Weight, tons: 61 (payload, 15)
Dimensions, feet (metres): 89·2 × 45·3 *(27·2 × 13·8)*
Speed, knots: 55

CUBA

Imminent delivery of third "Foxtrot" class submarine reported.

DENMARK

Replacement programme:
Submarines: possibility of purchase of three Swedish "A 17 variant" class. First would be for completion in 1985 and then one a year to replace four "Delfinen" class (page 123).
Minewarfare forces: new minehunters by late 1980s (page 128).
Fast attack craft: "Søløven" class replacements required in mid-1980s (page 126).
Four to eight helicopters with ASM required in early 1980s and coast defence SSMs in mid-1980s.
MHV 65 for sale (page 128).
Royal yacht *Dannebrog* re-engined and refitted in 1980 (page 129).

DOMINICAN REPUBLIC

USS *Stallion* ATA 193 transferred 30 October 1980 and renamed *Enriguillo* RM 22.

ECUADOR

Corvette *Los Rios* launched 27 February 1981.

EGYPT

Twelve 65 ft Sea Spectre CPC ordered from USA.
Reported order for 14 more SRN 6 hovercraft.
Reported that USS *Wahoo* SS 565 may be purchased.

ETHIOPIA

Two additional "Osa II" class FAC(M) delivered March 1981.

FRANCE

Naval Air Arm (page 154). Remaining Neptunes of Squadron 25F to be replaced by five Guardians ordered in 1980 for delivery in 1983. Existing Atlantiques to be replaced by planned 42 Nouvelle Génération (Atlantique NG)—prototype due to fly in 1981 and series production due in 1983 for squadron service starting in 1985.
Submarine: *Ariane* to Réserve Speciale 26 March 1981 (page 158).
Aircraft carriers: funds provided in 1981 estimates to equip Brest Dockyard to build nuclear-powered carriers. First to be laid down in 1983 (page 159).
Destroyers: *La Gallisionière* transferred to Atlantic from Mediterranean early 1981 on relief by *Duplelx* (page 164).
Frigates: *Le Gascon* sunk as target 12 March 1981.
Survey ships: *Octant* paid off 10 October 1980.

GERMANY (FEDERAL REPUBLIC)

Destroyers: Transfers to Greece *Z3* on 16 October 1980 and *Z4* on 22 February 1981. Reported that *Z2* and *Z5* to be transferred September 1981.

GREECE

Destroyers: See Germany (Federal Republic) above.
Name of *Z3* reported as *Niarchos*. Also reported that *Z2*, *Z4*, and *Z5* are to be used for spares and that *Niarchos* is to replace *Thyella* D 28. "Gearing" class—USS *Corry* and *Dyess* transferred May 1981, former for reactivation, latter for spares.
Light forces: *Simeoforos Zenos* P 27 ("La Combattante III" class) commissioned 24 March 1981.
Tompazis D 215 acts as Hellenic Navy flagship.
Elli ("Kortenaer" class) to commission in October 1981.

HONG KONG

Nine Fairey-Allday "Spear" class to be delivered 1981.

"UDALOY" Class

1981, Federal German Navy

INDONESIA

Submarine *Cakra* commissioned 19 March 1981 (page 232).
Four further PSMM Mk 5 ordered from Tacoma-Korea in 1980 (page 234).
Amphibious forces. Also reported that the four new LSTs under construction are at Hyundai, South Korea (page 236).

IRAQ

Frigate *Ibn Khaldoum* commissioned 13 March 1980 (page 245).
Reported that three "Nestin" class minesweepers delivered from Yugoslavia 1979-80 (page 247).
Presidential yacht of 2 000 tons ordered in Denmark in 1980.
Diving tender building in the Netherlands.

ISRAEL

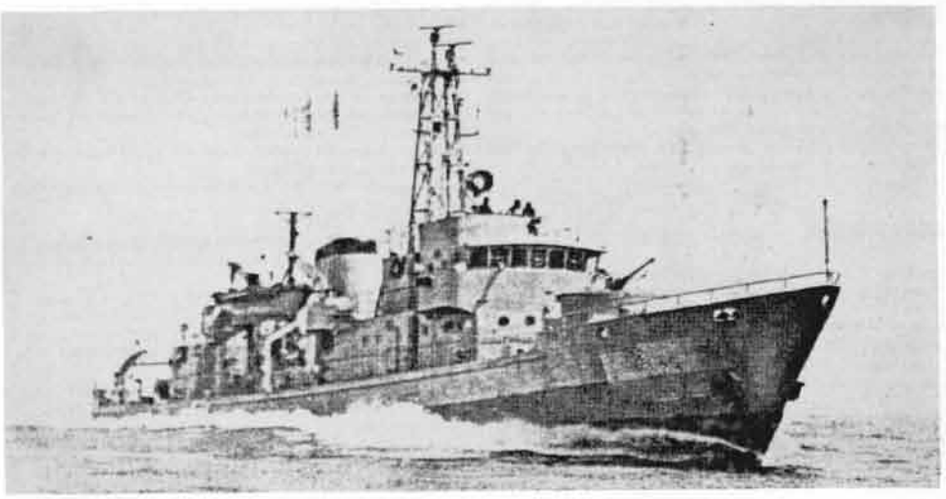
See Chile for "Saar 4" class transfers.

JAPAN

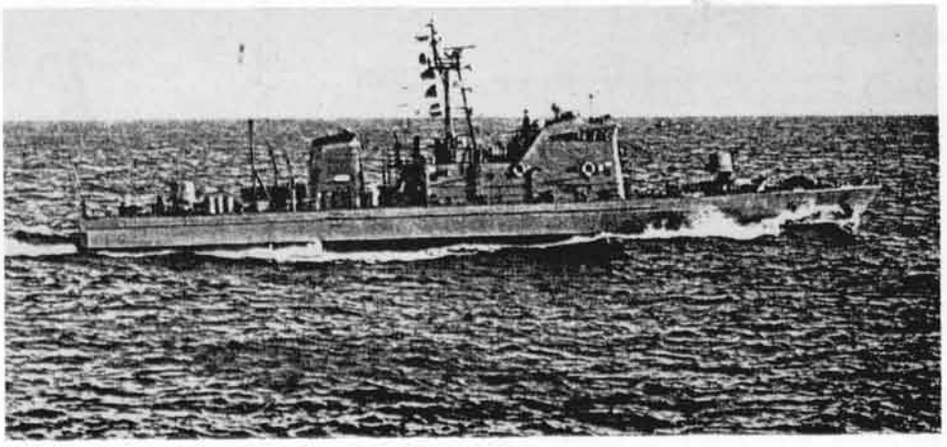
Japan (MDF) commissioning dates—SS 574, 5 March 1981 (page 275); DD 144, 27 March 1981 (page 276); DE 226, 28 March 1981 (page 280); LSU 4171-2, 27 March 1981 (page 282).
"DE 227" class:
Dimensions, feet (metres): 298·5 × 35·4 × 11·5 *(91 × 10·8 × 3·5)*
Main engines: to be the same as "Ishikari".
Complement: 98 (page 280).
DD 130 ("Hatsuyuki" class) approved FY 1981 (page 276).
SS 578 ("Yuushio" class) approved FY 1981 (page 275).
MSC 656-659 now approved (page 283).
Remaining three "Takatsuki" class to be modified (page 277).
Laid down dates of "Hatsuyuki" class—DD 124 and 125, April 1981; DD 126, 4 February 1981 (page 276).
Kouzu MST 473 paid off 18 March 1981 (page 283).
Japan (MSA) commissioning dates—PL125, 21 October 1980; PL 126, 17 October 1980; PC 214, 29 January 1981; PC 216, 27 February 1981; PC 218, 29 January 1981.

KOREA, REPUBLIC (SOUTH)

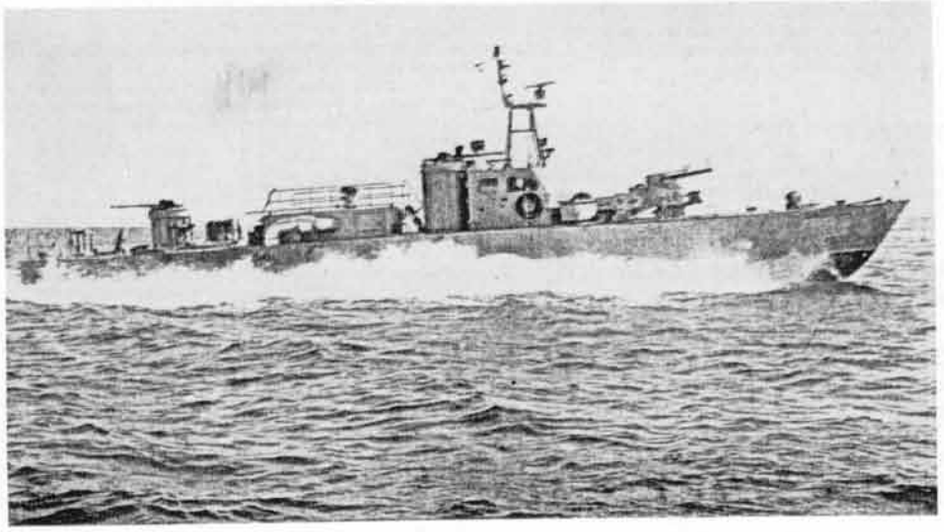
Building programme of patrol and midget submarines reported.
Name of 1 600 ton frigate reported as *Ulsan* FF 951 (page 303).
Commissioned 1 January 1981.



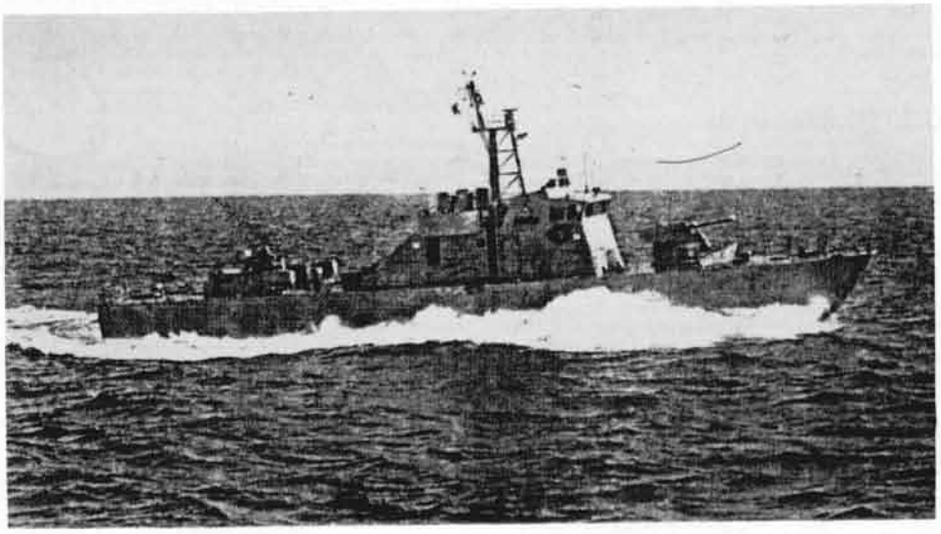
SEA WHALE



SEA DOLPHIN



SEA HAWK



SEA SHARK

Displacement, tons (full load): 1 940
Length overall: 334·6 ft *(102 m)*
Following steel-hulled craft, totals unknown, built by Korea Shipbuilding and Engineering Corp. for the Korean navy:-
"Sea Whale" class:
Displacement, tons: 500
Dimensions, feet (metres): 199·4 × 26·2 × — *(60·8 × 8 × —)*
Main engines: 2 diesels; 9 600 hp = 25 knots
Range, miles: 7 800 at 15 knots
Complement: 35

"Sea Shark" class:

Displacement, tons: 250
Dimensions, feet (metres): 158·1 × 23·3 × — *(48·2 × 7·1 × —)*
Main engines: 2 diesels; 7 320 hp = 25 knots
Range, miles: 3 300 at 15 knots
Complement: 34

"Sea Falcon" class:

Displacement, tons: 240
Dimensions, feet (metres): 147·3 × 23 × — *(44·9 × 7 × —)*
Main engines: 4 diesels; 14 400 hp = 40 knots
Range, miles: 1 000 at 22 knots
Complement: 37

"Sea Dolphin" class:

Displacement, tons: 140
Dimensions, feet (metres): 108·2 × 22·6 × — *(33 × 6·9 × —)*
Main engines: 2 diesels; 9 000 hp = 38 knots
Range, miles: 1 000 at 20 knots
Complement: 22

"Sea Hawk" class:

Displacement, tons: 80
Dimensions, feet (metres): 84·3 × 17·7 × — *(25·7 × 5·4 × —)*
Main engines: 2 diesels; 7 320 hp = 42 knots
Range, miles: 500 at 20 knots
Complement: 15

"Sea Gull" class:

Displacement, tons: 80
Dimensions, feet (metres): 78·7 × 18 × — *(24 × 5·5 × —)*
Main engines: 2 diesels; 3 920 = 30 knots
Range, miles: 950 at 20 knots
Complement: 18

"Sea Snake" class:

Displacement, tons: 30
Dimensions, feet (metres): 65·6 × 14·4 × — *(20 × 4·4 × —)*
Main engines: 2 diesels; 1 900 hp = 27 knots
Complement: 8

Aluminium hull.

LIBYA

"Combattante IIG" class. Additional name reported as *Beir Alkur*, laid down 20 October 1979.
Beir Glulud laid down 23 April 1979, launched 30 September 1980.
Eighth ship laid down late 1980.
Name of fourth "Foxtrot" class submarines *Matrega* and two "Natya" class named *Ishissar* and *Tayyar*.

MALAYSIA

Reported that two frigate/corvette type ordered in West Germany in February 1981 and that a sister to *Sri Indera Sakti* is on order.
Rahmat and *Hang Tuah* to be refitted with 100 mm Compact guns (pages 315-316).
"Ton" class minesweepers—*Kinabalu* and *Ledang* paid off for disposal in 1980 and *Mahamiru* sunk in 1980 as missile target.

MAURITANIA

Two 130 ton FAC ordered from Auroux, France—first laid down 1980.

MEXICO

Five patrol vessels with helicopter deck ordered from Bazan, Cadiz:
Displacement, tons: 900
Dimensions, feet (metres): 219·8 × 34·4 × — *(67 × 10·5 × —)*
Gun: 1—40/70 mm Breda Bofors
Main engines: 2 diesels; 9 000 hp = 18 knots

Sail training ship ordered from Ast. Celaya, Spain.

MOZAMBIQUE

Reported but not confirmed that two Netherlands' patrol craft delivered in 1980 with two more in 1981.

NETHERLANDS

Naval Air Force. Last three Wasp helicopters deleted from 860 Squadron (page 329).
Submarines: *Zeeleuw* to be laid down second half 1981 (page 331).
Groningen transferred to Peru 2 February 1981.
Drenthe may be transferred to Peru (page 333).
Piet Heyn ("Kortenaer" class) commissioned 14 April 1981 (page 333).
Abraham Crijnsen and *Jan van Brakel* launched 16 May 1981 (page 333).
Dordrecht ("Alkmaar" class) laid down 5 January 1981 (page 335).

NEW ZEALAND

Taranaki to receive extensive engine refit in near future, two Rolls-Royce Tyne gas turbines being fitted. Flight deck and hangar for Lynx helicopter (page 340).

NIGERIA

Agu "FPB 57" class launched 7 November 1980 (page 343).
Ayam "Combattante IIIB" class—beam 24·9 ft *(7·6 m)* launched 10 November 1980 (page 343).
Makurdi and *Hadejia* undergoing modernisation in UK (page 343).

OMAN

First 56m FAC (missile) *Dhofar* (page 352).
Four 25m Patrol Craft and one 30m landing craft ordered from Vosper Private Ltd, Singapore in April 1981.

PAKISTAN

Italian patrol craft are of "MC 55" type not "M 55"—18 of this type now delivered (page 357).
250-ton DG vessel building at Karachi with French assistance.

PERU

Netherlands destroyer *Groningen* handed over on 2 February 1981 and commissioned as *Galvez* DD 78 on 2 March 1981 (page 365).
Two Peruvian built "Lupo" class under construction at Callao. Approximately 50 per cent completed—due to enter service 1983-84 (page 366).

PORTUGAL

Reported that "Kellar" class survey ship has been renamed (page 387).
Schultz Xavier reported as being in reserve (page 387).

QATAR

Three "Combattante III" class FAC(M) on order from France (page 388):-
Displacement, tons: 345 standard; 420(?) full load
Dimensions, feet (metres): 183·7 × 26·9 × 7·2 *(56 × 8·2 × 2·2)*
Missiles: SSM; 8 Exocet MM40
Guns: 1—76 mm OTO Melara; 2—40 mm Breda Bofors (Twin); 2—30 mm Oerlikon (?twin)
Main engines: 4 MTU 20V 538 TB93 diesels; 19 300 hp = 38·5 knots

Possibly to be built by CM de Normandie, Cherbourg.

SENEGAL

"PR 72M" class is "PR 72S". Launched 22 December 1980. Named *Njambuur* P 773.
Complement 34 (accommodation for 41) (page 395).

SINGAPORE

Three FAC(M) of 398 tons ordered from Singapore SB and Eng Co in 1980 (page 397).
Twelve 40-ton patrol craft on order for Singapore Police for delivery 1980-81 (page 398).

SWEDEN

Coast Guard (page 432): following currently listed:
3 Cessna aircraft with 1 helicopter and 1 fixed-wing plane planned.
Craft:-
2—335 tons GRP TV 171-172
5—50/53 tons aluminium TV 101-105
1—36 tons aluminium TV 116
3—36 tons aluminium TV 281-283 (more planned)
8—20/22 tons aluminium TV 271-278
20—17 tons aluminium TV 236-8, 240-250, 255-261
1—15 tons aluminium TV 234
4—12 tons aluminium TV 251-4
3—12 tons aluminium TV 220, 230, 232
24—light craft TV 314-5, 317-8, 341, 350, 356, 363, 365-6, 368-9, 371-4, 381-5, 388-9, 391
5—Gemini type TV 602, 661-4
5—Ice craft TV 801, 804-7
4—Support ships, Class A TV 01-04
10—Sea Trucks, TV 041-9, 059
4—Support craft, Class C TV 011-12, 014, 015
1—Catamaran, Class D1 TV 020
3—Catamarans, Class D2 TV 021-3
6—Pollution control ships, Class G TV 061-4, 068-9
22—Work boats and minor craft, Classes E, H, J and K TV 031-4, 036, 071, 081-9, 090-6

TURKEY

USS *Carpenter* DD 285 transferred 20 February 1981 and renamed *Annitepe* D 347. This number now presumably removed from *Gemlik* (page 457).

UNION OF SOVIET SOCIALIST REPUBLICS

"Yug" class corrected particulars (page 532):
Displacement, tons: 2 100
Dimensions, feet (metres): 270·6 × 37·7 × 12·8 *(82·5 × 11·5 × 3·9)*
Guns: Fitted for but not with 6—25 mm (twins)
Main engines: 2 Skoda-Sulzer 6 TD 48 diesels; 3 600 hp; 2 shafts = 16 knots
Range, miles: 8 700 cruising
Complement: 54

UNITED ARAB EMIRATES

Second "Lurssen TNC 45" class *Shaheen* P 4504 launched December 1980. Shipment expected of first pair mid-1981 (page 550).

UNITED KINGDOM

Lynx 2 ships' flights squadron is 815 (page 552).
Ark Royal launched 2 June 1981 by HM Queen Elizabeth the Queen Mother (page 562).

UNITED STATES OF AMERICA

General: The Reagan Administration budget changes to the Carter FY 1981 and FY 1982 Shipbuilding/Conversion programmes have been listed in front of the US section. Due to the late release of this material there was not time to put the material in each class section. The following is a short textual explanation of what the changes mean:

Submarines:
(a) There is no change to the building rate of the "Ohio" class SSBNs. However, there is a change to the "Los Angeles" class. The Carter Administration called for one unit to be built each year except FY 1986 when there were to be two. The Reagan Administration calls for two in the FY 1982 budget and three every year thereafter. As a result of this increase in building rate, plans are seriously being considered for reactivating the Mare Island Naval Shipyard construction facilities to aid in the construction of the class.
(b) The FA-SSN design is officially dead. However, research and development studies will continue into finding a design for a cheaper, smaller submarine just as capable as the "Los Angeles" class.
(c) Original plans called for fitting number SSN 721 and onwards of the "Los Angeles" class SSNs with the Tomahawk cruise missile system during construction. The Reagan Administration has asked for money to accelerate the cruise missile programme so that if approved number SSN 719 and onwards will be fitted with the system during construction.

Aircraft Carriers:
(a) Funds to construct CVN 72 will be requested in the FY 1983 programme.
(b) It is planned to increase the carrier force level to 15 ships. This is to be done by reactivating *Oriskany* (CV 34) for use in a light strike role and retaining *Coral Sea* (CV 43) as a deployable carrier when *Carl Vinson* (CVN 70) is commissioned, instead of having CVN 70 replace CV 43. Should *Oriskany* be recommissioned, she will be replaced by CVN 71 when the latter commissions and *Oriskany* will replace *Lexington* (AVT 16) as training carrier. Should *Oriskany* not be recommissioned, CVN 71 will replace *Coral Sea* who in turn will replace *Lexington*.

Battleships:
It is planned to recommission *New Jersey* with FY 1982 funding and *Iowa* with FY 1983 funding. If done, one ship will be assigned to each foreign-serving fleet with *New Jersey* becoming flagship of Seventh Fleet and *Iowa* flagship of Sixth Fleet instead of the current Destroyer Tender. It is planned to get both to sea as soon as possible by delaying any modernisation until each ship's first overhaul. Modernisation will include the fitting of Harpoon missiles, the Tomahawk cruise missile and conversion to distillate fuel. The after turret will not be removed as it would create insurmountable ballasting problems. Under FY 1982 funds are to be requested to make feasibility studies for reactivating *Wisconsin* and *Missouri*. *Missouri* would cost the most and be the least likely to be reactivated as she has been out the longest and has a speed restriction due to her 1950 gounding on Thimble Shoals. It costs approx $12·9 million per year to keep a battleship at sea and it will take two years *(New Jersey)* to three years (others) to recommission each ship.

Cruisers:
(a) The "CGN 42" class, a "Modified Virginia" class with AEGIS will be reinstated in the programme with funds requested to construct the first ship in the FY 1984 programme.
(b) No change in the "CG 47" class construction rate.

Destroyers:
It is planned to build an unspecified additional number of "Spruance" class DDs.

Frigates:
(a) No change in the FFX programme. It will be built as scheduled.
(b) The "FFG 7" class construction programme has been stretched out to the FY 1985 programme instead of ending in the FY 1982 programme. The total force level of the "FFG 7" class is planned at 54 ships.

Amphibious Warfare ships:
(a) It is the declared object of the Reagan Administration to increase the US Amphibious Lift capability from 1·15 Marine Amphibious Force (MAF consists of three Marine Amphibious Brigades of 16 500 men each) to 2·0 Marine Amphibious Forces. To do this, it will be necessary to acquire 115 new amphibious ships, at an average of five a year, between now and 2001.
(b) The "LSD 41" class will be built at the rate of two a year starting in FY 1983.
(c) The current construction of the LCAC air-cushion vehicle calls for a production of 36 fleet units by FY 1986.

Mine Warfare ships:
(a) It is planned to build a new class of minehunter/sweeper (MSH) starting in FY 1984 to supplement the MCM programme.
(b) Construction of the MCM programme begins with the prototype in FY 1982 and follow on units by FY 1984.

Auxiliaries:
(a) It is planned to open negotiations with the Royal Navy for the purchase of RFA *Tarbatness* for employment by the US Navy as AFS 9.
(b) The force would be increased by over 30 ships in the next five years. This increase would be centred primarily around the "Yellowstone" class ADs, a new class of Ammunition ships (AE) and the Maritime Prepositioning Ships for the Rapid Deployment Force.

Submarine Construction:
The contract for the construction of SSN 721, 722 and 723 was awarded to Newport News Shipbuilding and Drydock Co, Newport News, Virginia in 17 March 1981. The award was made to Newport News due to "serious problems in the delivery schedules of the 21 submarines (all from the "SSN 688" class) now under construction in your yard." This quote is from a letter to the President of General Dynamics, from the Secretary of the Navy. He went on to say that "performance to date by General Dynamics' Electric Boat Division . . . does not support its claims that it could handle the new work." SSN 721/722 were authorised in the FY 1980 programme while SSN 723 and the still to be awarded SSN 724 were authorised in the FY 1981 programme.
In testimony before Congress on 12 March 1981 Vice-Admiral Earl B. Fowler, Jnr talked about the "Los Angeles" and "Ohio" class construction programme. Both classes use a certain grade of weldable-mild-carbon steel that is equivalent to industry specification ASTM A36 for many non-pressure hull applications including some where a lesser strength steel could be used. In November 1978 it was discovered that some of the steel used in the construction of the two classes had faulty colour coding and was not the type the colour code suggested.

All the improper steel in varying amounts had been used in all "SSN 688" and "SSBN 726" class constructed at or being constructecd at General Dynamics. Those already commissioned had diving restrictions imposed on them until they could be inspected and corrective action was taken on those ships still at the yard. Slightly more than a year later it was discovered that there were some incomplete structural weldings on various units. For example, out of the 17 792 welds in *Bremerton* (SSN 698), 7 962 (45 per cent) did not have inspection records. Of that amount 6 893 were still accessible to inspectors and after reinspection 2 802 welds required repair (27 per cent of those reinspected). Of the 36 149 welds in *Ohio* (SSBN 726), 9 693 (26·8 per cent) did not have inspection records. Of that amount 8 476 of these were still accessible to inspectors and of that amount 2 772 welds required repair (33 per cent of those reinspected). The blame for all of the above and other matters is laid to "a serious breakdown in workmanship and quality control . ." at the shipyard. As a result of the welding, poor steel problems etc the "Los Angeles" class programme was 16 months behind schedule and the Trident programme 32 months behind schedule on 1 April 1981.

Latest transfer details

Date of Transfer	*Recipient*	*USN name/hull number*	*New name/hull number*	*Mode*
1980				
30 Oct	Greece	*Wadsworth* DD 516 ex-West German *Z3*	*Niarchos*	Spec
17 Dec	Taiwan	*Hamner* DD 718		Sale
1981				
26 Jan	Peru	*YO 171*		Sale
26 Jan	Peru	YW 128		Sale
20 Feb	Turkey	*Carpenter* DD 825	*Annitepe* D 347	Sale
26 Feb	Greece	*Claxton* DD 571 ex-West German *Z4*	(For cannibalisation and scrapping)	Spec
27 Feb	Taiwan	*Johnston* DD 821		Sale
27 Feb	South Korea	*Newman K. Perry* DD 883		Sale
May	Greece	*Dyess* DD 880		Sale
May	Greece	*Corry* DD 817		Sale
Sep	Greece	*Dyson* DD 572 ex-West German *Z5*	(For cannibalisation and scrapping)	Spec
Sep	Greece	*Ringgold* DD 500 ex-West German *Z2*	(For cannibalisation and scrapping)	Spec

National Defense Reserve Fleet

The National Defense Reserve Fleet (NDRF) is a part of the Maritime Administration (MARAD). As a reserve fleet, it forms a pool of ships that can be employed by the Navy for peacetime purposes, such as conversion to Navy auxiliaries, or in the case of war, to enhance the sealift capabilities of the Navy. Eighty-five of the ships laid up in the NDRF, are former US Navy Amphibious Warfare and Auxiliary ships. The age of these ships vary widely. Some were built during World War II, others as little as a few years ago. The NDRF currently has a programme entitled Ready Reserve Fleet Ships (RRF). These are ships in the NDRF that have had their material condition raised to a point that should they be needed the time to reactivate the ships would be much less than those ships not in the RRF programme.

As of 31 March 1981, the breakdown of NDRF ships is as follows:

Ships on the NDRF Retention List

Design	*CDC**	*Military auxiliary*	*CM**	*Special programme ships***	*Scrapping candidates*	*Reserve fleets JR*	*BE*	*SB*	*Total*
C1-ME2-13a	—	1	—	—	—	1	—	—	1
C2-S-B1	—	1	—	—	8	6	—	3	9
C2-F Cargo	—	—	—	—	1	1	—	—	1
C2-S-AJ1, AJ3	—	—	—	—	3	3	—	—	3
C2-S-E1	—	—	—	—	1	1	—	—	1
C2-T Cargo	—	—	—	—	1	1	—	—	1
C3-IN P&C	—	—	—	—	1	1	—	—	1
†C3-S-33a	5	—	—	—	—	4	1	—	5
†C3-S-38a	4	—	—	—	—	4	—	—	4
C4-S-1a	—	1	—	—	1	2	—	—	2
C4-S-1b	—	1	—	—	—	—	—	1	1
†C4-S-1f	1	—	—	—	—	—	1	—	1
†C4-S-1h	1	—	—	—	—	1	—	—	1
†C4-S-1p	2	—	—	—	—	1	1	—	2
†C4-S-1u	2	—	—	—	—	—	1	1	2
†C4-S-1qb	2	—	—	—	—	—	—	2	2
C4-S-B1	—	—	—	—	—	—	—	1	1
C4-S-B2	—	1	—	—	1	1	—	—	1
C4-S-B5	—	1	—	—	—	1	—	—	1
†C4-S-58a	5	—	—	—	—	5	—	—	5
C4-S-69b	—	—	—	5	—	—	—	5	5
†C4-S-73b	—	—	3	—	—	3	—	—	3
†C6-S-1qb	1	—	—	—	—	—	—	1	1
N3-M-A1	—	—	—	1	—	1	—	—	1
P2-S2-R2	—	7	—	—	—	2	—	5	7
P2-SE2-R1	—	7	—	—	—	5	—	2	7
R2-S-BV1	—	—	—	—	1	—	—	1	1
T1-M-BT1	—	—	—	—	1	—	1	—	1
T2-A	—	—	—	4	—	—	2	2	4
T2-SE-A1	—	5	—	—	—	3	2	—	5
T2-SE-A1-J	—	—	—	2	—	—	2	—	2
T2-SE-A2	—	1	—	1	—	—	1	1	2
T3-S-A1	—	—	—	1	—	—	1	—	1
T3-S2-A1	—	—	—	2	—	2	—	—	2
V4-M-A1	—	2	—	—	—	—	2	—	2
†VC2-S-AP2	112	2	—	1	—	39	20	56	115
†VC2-S-AP3	18	2	—	—	2	12	6	4	22
VC2-S-AP5	—	—	—	34	—	30	—	4	34
Z-EC2-S-C5	—	—	—	1	—	1	—	—	1
AG (USN AG-193)	—	1	—	—	—	—	—	1	1
Navy Tugs (ATF/ATA)	—	12	—	—	—	4	8	—	12
ARS	—	—	—	—	—	—	—	1	1
LSD	—	—	—	1	—	4	—	3	7
LST	—	10	—	7	—	3	—	7	10
Military Cargo type	—	—	11	—	—	8	2	1	11
AFDB (Sections)	—	9	—	—	—	9	—	—	9
MH-1 (Army)	—	—	—	—	—	1	—	—	1
Roll-on/roll off	—	—	—	1	—	1	—	—	1
YFN	—	1	—	—	—	—	1	—	1
YHLC	—	2	—	—	—	2	—	—	2
YSR	—	1	—	—	—	1	—	—	1
YTM	—	2	—	—	—	2	—	—	2
AGOR	—	1	—	—	—	—	1	—	1
Army Dredge	—	—	—	2	—	2	—	—	2
Total by design***	154	70	14	64	21	168	53	102	323

Notes:
*CDC—Commercial Dry Cargo; CM—Other than Commercial Dry Cargo (such as tankers and Ro-Ros)
**Special Programme Ships are listed separately below
***Excludes two ships sold but not yet delivered
†Commercial designed ships retained for defence purposes
††Reserve Fleets: JR—James River, Virginia; BE—Beaumont, Texas; SB—Suisun Bay, California

Military auxiliaries in the NDRF retained for defence purposes

	Reserve Fleet Locations			
Type	*James River*	*Beaumont*	*Suisun Bay*	*Total*
LKA (C4 type)	—	—	1	1
LST	3	—	7	10
AFDB (Sections)	9	—	—	9
AG (C4 type)	1	—	—	1
(AG-193)	—	—	1	1
AGOR	1	—	—	1
AH (C4 type)	1	—	—	1
AK (C1 type)	1	—	—	1
(C2 type)	—	—	1	1
(C4 type)	1	—	—	1
(AP2 type)	1	—	1	2
(AP3 type)	2	—	—	2
AO (T2 type)	3	2	1	6
AP (P2 type)	7	—	7	14
ATA	2	2	—	4
ATF	2	6	—	8
V4-M-A1 (tug)	—	2	—	2
YFN	—	1	—	1
YHLC	2	—	—	2
YSR	1	—	—	1
YTM	2	—	—	2
C5-S-73b	3	—	—	3
Military Cargo type	8	2	1	11
Total	50	15	20	85

Special Programme Ships

Name	*Type*	*Purpose Held*	*Location*
Clamp (ARS-33)	ARS	Navy Reactivation	Suisun Bay
34 ships	VC2-S-AP5	RRF Spare Parts	James River & Suisun Bay
Ex-LSD-13/15, 18, 20, 26 & 27	LSDs	RRF Potential Reactivation	James River & Suisun Bay
Ex-AO-25, 36, 37, 42, 43, 56, 72, 93	AOs	Possible inclusion in RRF	James River, Beaumont & Suisun Bay
Transerie	T2-SE-A1-J	Possible inclusion in RRF	Beaumont
Transsuperior	T2-SE-A1-J	Possible inclusion in RRF	Beaumont
Sturgis (US Army Nuclear Barge)	MH-1	Long term storage	James River
Colorado	C4-S-69b	Temporary layup	James River
Michigan	C4-S-69b	Temporary layup	James River
Wyoming	C4-S-69b	Temporary layup	James River
Montana	C4-S-69b	Temporary layup	James River
Idaho	C4-S-69b	Temporary layup	James River
Bay (to become AK 286)	C3-S-33a	Inclusion in RRF	James River
Lake (to become AK 287)	C3-S-33a	Inclusion in RRF	Philadelphia Navy Yard
Pride (to become AGS 41)	C3-S-33a	Inclusion in RRF	Philadelphia Navy Yard
Scan (to become AGS 40)	C3-S-33a	Inclusion in RRF	Philadelphia Navy Yard
Adventurer	C3-S-38a	Inclusion in RRF	James River
Agent	C3-S-38a	Inclusion in RRF	James River
Aide	C3-S-38a	Inclusion in RRF	James River
Ambassador	C3-S-38a	Inclusion in RRF	James River
Cape Alava	C4-S-58a	Inclusion in RRF	James River
Cape Ann	C4-S-58a	Inclusion in RRF	James River
Cape Alexander	C4-S-58a	Inclusion in RRF	James River
Cape Archway	C4-S-58a	Inclusion in RRF	James River
Cape Avinof	C4-S-58a	Inclusion in RRF	James River
Cracker State Mariner	C4-S-1h	Inclusion in RRF	James River
Lone Star Mariner	C4-S-1p	Inclusion in RRF	James River
Hoosier Mariner	C4-S-1p	Inclusion in RRF	Beaumont
Ohio	Military Cargo type	Inclusion in RRF	James River
Puerto Rico	Military Cargo type	Inclusion in RRF	James River
Maine	Military Cargo type	Inclusion in RRF	Beaumont
Washington	Military Cargo type	Inclusion in RRF	Beaumont
Catawba Victory	VC2-S-AP2	Inclusion in RRF	Cheatham Naval Annex, Norfolk, Va
Santa Ana	C4-S-1u	Inclusion in RRF	Beaumont
California	C4-S-1u	Inclusion in RRF	Suisun Bay
President	C4-S-1qb	Inclusion in RRF	Suisun Bay

NAVAL STRENGTHS

	Ballistic Missile Sub-marines (N = Nuclear D = Diesel)	*Cruise Missile Sub-marines (N = Nuclear D = Diesel)*	*Fleet Sub-marines*	*Patrol Sub-marines*	*Aircraft Carriers (L=light)*	*Cruisers and Light Cruisers*	*Destroyers*	*Frigates*	*Corvettes*	*FAC Missile*	*FAC Torpedo*	*FAC Gun*	*Patrol Craft*	*Mine-layers*
ALBANIA				3							44	6	3	
ARGENTINA				4 (1+5)	1 (L)	1	8 (1+3)	3 (6)	7		2	2	32**	
AUSTRALIA				6	1 (L)		4	8 (2+2)					14 (13+5)	
BELGIUM								4					8	
BRAZIL				8	1 (L)		12	6 (1)	10				22	
BULGARIA				4				2	3	4	10		6	
CANADA				3			4	16 (6)					13	
CHILE				3 (2)		3	6	5	3	1 (2)	4		29	
CHINA, PEOPLE'S REPUBLIC	1 (D) (?)		2 (?)	92 (9)			12 (6)	16 (2)	12	188 (12)	255 (10)	376 (10)	169 (4)	
COLOMBIA				2+2 (small)			3	1 (4)	3				23	
CUBA				2 (1 res)				(1 res)		21 (4 res)	22		42	
DENMARK				6				8 (2)	2	10	6		65	7
ECUADOR				2			2	1	— (6)	3	3		7	
EGYPT				12			5	3		24 (3)	30		21 (6)	
FINLAND									2	5 (1)		12	6	3
FRANCE	5 (1) (N) 1 (D)		1 (3)	20	2 (2)	2	19 (5+5)	21 (7+1)		5 (2+6)			13 (2+9)	
GERMANY (Democratic)								2	1 (5)	15	49		12	
GERMANY (Federal)				24			9	6 (6+2)	6	30 (10)	10		8	
GREECE				10			15	4 (1+3)		14	12		11	2
INDIA				8 (?)	1 (L)	1	3 (2)	24 (3)	3 (?4)	16			4 (7)	
INDONESIA				4 (2)				10		9	3		29	
IRAN							3	4	4	9 (3)			47	
IRAQ								— (1+4)	(6)	12	12		31	
ISRAEL				3					(2)	25 (2)			41 (2)	
ITALY				9 (2)	1 (1)	2	6	12 (6)	8 (6)		7			
JAPAN				14 (3)			34 (9+2)	16 (1+1)			5		21	
KOREA (North)				16 (1)				4		18	175 (2)	147 (4)	58	
KOREA (South)							10	7 (1)	3	9			38	
LIBYA				4 (2)				1	5	19 (6)			9	
MALAYSIA								2		8		6	22	
MEXICO							2	6	38				45	
NETHERLANDS				6 (2)			5	11 (7+1)	6				5	
NEW ZEALAND								4					4	
NIGERIA								1 (1)	4	6			30	
NORWAY				15				5	2	40	8		3	3
PAKISTAN				6+ 6 small		1	8				4	12	5	
PERU				10 (2)		3	8	2 (2)		6			14 (6)	
PHILIPPINES								8	11	(3)			74	
POLAND				4			1			13	10		65	
PORTUGAL				3				17					27	
ROMANIA									3	5	25	20	45	
SAUDI ARABIA								(4)	4	7 (2)	3		36	
SOUTH AFRICA				3				3		6 (6)			20 (8)	
SPAIN				10 (2)	1 (L) (1)		11	17 (3+3)					84 (4)	
SWEDEN				12 (4)			3			17	22		33	28 (1)
SYRIA								2		18	8		3	
TAIWAN				2 (2)			23	10	3	2	9		10	
THAILAND								6		6 (2)			80	
TURKEY				16 (1+1)			14	2		13 (4)	7		55 (8)	7
UNION OF SOVIET SOCIALIST REPUBLICS	70 (3) (N) 19 (D)	46 (2) (N) 21 (D)	50 (3+5 conv)	160 (3) (+100 res)	3 (1+1N)	41 (11)	73 (+14 res)	186 (5) (12 res)	105 (2)	120	30		324	2
UNITED KINGDOM	4 (N)		12 (3+1)	16	2 (2) (L)	6	11 (9)	45 (7 res)					22 (1)	1
UNITED STATES OF AMERICA***	36 (N) (8N 2 res)	1 res (D)	77 (24+3 res)	5 (1 res)	13 (3N) +(2N) +5 res	27 (4) (+4 res)	88 (5)	74 (36)					3	
VENEZUELA				4 (2)			4	6 (4)		3		3	21	
YUGOSLAVIA				7					4	18			25	

Notes: The type headings used necessarily include ships with wide variations in capability. This table therefore gives only a general indication of the make-up of these navies. For an accurate comparison reference must be made to the individual national sections.

Figures in brackets indicate ships under construction or planned.

Ocean Mine-sweepers	Coastal Mine-sweepers/ Mine-hunters	Inshore Mine-sweepers	Mine-sweeping Boats	Assault Ships	Landing Ships	Landing Craft	Depot Repair Main-tenance Ships	Survey Research Ships (Large and Small)	Supply Ships	Tankers Large	Tankers Small	Hydrofoils and ACVs	Misc-ellaneous	Personnel†	
2		4	11								4		15	3 000	ALBANIA
	4/2				5	24		5		3			28	36 930††	ARGENTINA
	3 (2)				1	6	1	3 (1)		1 (1)			55 (3+1)	17 300	AUSTRALIA
7	4/2 (10+5)	14						2	2				13	4 721	BELGIUM
	6				2	35	2	14	1	1	2		48	45 800	BRAZIL
2	4		12			27		3			3		38	10 000	BULGARIA
							1	4	3		2	1	35	14 000	CANADA
					4	11		1		2			13	28 600	CHILE
23		80			37	470	2	25 (2)	29	3	22		430+	298 000	CHINA
								3			1		22 (2)	8 700	COLOMBIA
	2	5	1			7		13					23	6 000	CUBA
	8										2		11 (1)	6 070	DENMARK
					3			2	1				13	3 800	ECUADOR
10		2				27						3	11	17 500	EGYPT
						14							33	2 500	FINLAND
	17/16 (7+2)			2	5	45 (2+2)	6	9	2	4 (1+1)	3		159 (4+6)	69 130	FRANCE
	33				12 (5)			5	7		5		59 (1)	17 000	GERMANY (D)
	40 (10)	20				22	13		10	1	6		101	35 700	GERMANY (F)
	14				13	71	1	3 (1)			6		29	19 500	GREECE
6	4	4			1	10	2	5		2	4 (1)		17	46 000	INDIA
4	1				9 (4)	62	4	4		1	5		12	40 000	INDONESIA
	3	2			2 (2)	1	1	4	2	1	1	14	9	20 000	IRAN
2		3				4				(1)				3 000	IRAQ
					3	9						2 (2+10)	4	6 600	ISRAEL
4	24/3 (4+6)	5			2	50	7	4	1	2		4 (3)	83	41 900	ITALY
	35 (1+2)		6		8 (1)		3	7 (1)	1	2	24		60 (2)	43 897	JAPAN
						102							105	30 300	KOREA (N)
	8		1		20	4	1	6	4		4		3	40 000	KOREA (S)
2					3	5 (2+5)	1						7	3 000	LIBYA
	5				3		1 (?1)	1					55*	6 000	MALAYSIA
					3			2			2		16	20 240	MEXICO
	11/4 (15)	16				10	3	3	2				48	16 800	NETHERLANDS
								4					7	2 840	NEW ZEALAND
					2	0 (2)		1					67	4 049	NIGERIA
	10					7	1						17	8 500	NORWAY
	6							1			2		6	11 000	PAKISTAN
					6			4			7		20	20 500	PERU
					31	71	3	4			2		27	21 510	PHILIPPINES
24			25			42		1			7		64+3 AGI	25 000	POLAND
	4					14		4 (1)		1	1		7	14 000	PORTUGAL
	4	20	8										6+	10 000	ROMANIA
	4					12					(2)	8	7	3 500	SAUDI ARABIA
	10							2	1				10	6 758	SOUTH AFRICA
4	11			1	5	87		6		1	16		68	55 414	SPAIN
	12	18				144		6	1		1		52	22 900	SWEDEN
1	2	1											1	2 500	SYRIA
	14		9		28	22	1	4			7		44	64 100††	TAIWAN
	4		5		10	42 (4)		5 (1)			2 (1)		12	30 000††	THAILAND
	22	4	9 (Hunters)		5 (?)	70	5	5			9		81	45 000	TURKEY
144 (3)	128 (3)	53	50	1 (1)	87	40+	67 (1)	127	7	27	28	55 (2)	550 (3) +56 AGIs	433 000††	USSR
2 (12)	16/17 (9)	4		2	6	60	2	12	6 (1)	7 (2)	14	6	190 (1)	70 300††	UK
25				25	33 (1)	100	26 (3)	14	22	41 (6 res)	3	2 (5)	1 300 plus MSC	725 556††	USA
					6			3					18	7 500	VENEZUELA
	4	10	29 (river)		(1)	44		1			6		24	14 000	YUGOSLAVIA

* Including Police Craft ** Including PNA *** Plus 4 battleships
† Figures apply to 1981 with the exception of Canada, Japan and indicate overall naval strength. For details see the introductions to individual national sections.
†† Includes Marine Corps.

NAVAL EQUIPMENT

AIRCRAFT

Notes: (a) Second-line aircraft, such as communications and training types, are generally omitted; (b) For technical details see under country of origin;
(c) Class: A Carrier based B Helicopters C Land based; (d) Helicopter length is overall, with rotors turning

Country/ Manufacturer	*Strength*	*Role*	*Class (See note)*	*Country of Origin*	*Max Speed*	*Service Ceiling*	*Range*	*Max Endurance*	*T/O Weight*
ARGENTINA									
McDonnell Douglas									
Skyhawk (A-4Q)	15	F/W Attack Bomber	A	USA	(b)				
Dassault									
Super Etendard	14 ordered	F/W Fighter	A	France					
Grumman									
Tracker (S-2A/E)	6	F/W A/S	A	USA					
Aerospatiale									
Alouette III	9	Helicopter	B	France					
Aerospatiale									
Puma	3	Search and Rescue Helicopter	C	France					
Sikorsky									
Sea King (S-61D-4)	4	A/S Helicopter	B	USA					
Westland									
Lynx Mk 23	10 ordered	A/S Helicopter	B	UK					
Aermacchi									
MB 326GB	8	F/W Trainer and Light Attack	C	Italy					
Aermacchi									
MB 339	10	F/W Trainer and Light Attack	C	Italy	Ordered in 1980				
Lockheed									
Neptune (P-2H)	10	F/W Maritime Patrol	C	USA					
AUSTRALIA									
McDonnell Douglas									
Skyhawk (A-4G)	8	F/W Attack Bomber	A	USA	Plus 2 TA-4G trainers				
Lockheed									
Orion (P-3B/C)	19	F/W Maritime Patrol	C	USA	Operated by Air Force				
Grumman									
Tracker (S-2E/G)	19	F/W Maritime Patrol	A, C	USA					
Government Aircraft Factories (GAF)		F/W Maritime Patrol	C	Australia	168 knots (cruising)	21 000 ft *(6 400 m)*	730 n. miles at 10 000 ft *(3 050 m)*		8 500 lb *(3 855 kg)*
Search Master B/L									
British Aerospace									
HS 748	2	ECM	C	UK	Specially equipped by Sanders Associates, USA				
Bell									
Iroquois (UH-1B)	4	Helicopter	B	USA					
Bell									
JetRanger (206B-1)	2	Helicopter	B	USA					
Westland									
Wessex (HAS 31B)	4	Helicopter	B	UK	16 more in store				
Westland									
Sea King (HAS 50)	6	Helicopter	B	UK					
BELGIUM									
Aerospatiale									
Alouette III	3	Coast Guard Helicopter	A	France					
Sikorsky									
UH-34	1	Search and Rescue Helicopter	B	USA (built in France)					
Westland									
Sea King Mk 48	5	Search and Rescue Helicopter	B	UK	Operated by Air Force				
BRAZIL									
Embraer									
EMB-111 (P-95)	12	F/W Maritime Reconnaissance	C	Brazil	Operated by Air Force 208 knots (cruising)	25 500 ft *(7 770 m)*	1 590 n. miles at 10 000 ft *(3 050 m)*		15 432 lb *(7 000 kg)*
Grumman									
Tracker (S-2A/E) (P-16)	8	F/W Maritime Patrol	A	USA	Operated by Air Force				
Bell									
JetRanger II	18	Helicopter	B	USA					
Sikorsky									
Sea King (SH-3D)	5	Helicopter	B	USA					
Westland									
Wasp	9	Utility, Search and Rescue Helicopter	B	UK					
Westland									
Whirlwind	3	Helicopter	B	UK					
Westland									
Lynx	9	A/S Helicopter	A	UK/ France	Carried on new destroyers				
BULGARIA									
Mil									
Mi-4 ("Hound")	6	Helicopter	B	USSR	Used for coastal patrol, A/S and fleet defence duties				
WSK-PZL Swidnik									
Mi-2 ("Hoplite")	2	Helicopter	B	Poland					
CANADA									
Sikorsky									
CHSS-2 Sea King (CH-124)	32	Helicopter	B	USA					
Canadair									
Argus (CP-107)	22	F/W Maritime Patrol	C	Canada	20 000 ft 274 knots	20 000 ft plus *(6 100 m plus)*	5 124 n. miles at 194 knots		148 000 lb *(67 130 kg)*
Canadair									
CL-215		F/W Amphibian	C	Canada	157 knots (cruising)		1 130 n. miles		Land 43 500 lb *(19 731 kg)* Sea 37 700 lb *(17 100 kg)*

Wing span *Rotor diameter*	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
54 ft 2·3 in *(16·52 m)*	41 ft 2·4 in *(12·56 m)*	18 ft 1·5 in *(5·52 m)*	Two 400 shp Allison 250-B17B turboprop engines	Provision for underwing stores	Data for Search Master L, which is used by Australian Customs and Transport Departments, and has more advanced search radar than Search Master B. Both versions used by Indonesian Navy
52 ft 4 in *(15·95 m)*	48 ft 11 in *(14·91 m)*	16 ft 1·25 in *(4·91 m)*	Two 750 shp Pratt & Whitney (Canada) PT6A-34 turboprop engines	Six 127 mm rockets, or up to 28 2·75 in rockets	Used also by Chilean Navy and Gabon Air Force
142 ft 3·5 in *(43·38 m)*	128 ft 9·5 in *(39·25 m)*	36 ft 8·5 in *(11·19 m)*	Four Wright R-3350 EA-1 turbo-compound radial piston engines 3 700 hp each	15 600 lb of weapons *(7 075 kg)*	In service with 4 Sqdns. (Nos. 404, 405, 407 and 415)
93 ft 10 in *(28·6 m)*	65 ft *(19·82 m)*	29 ft 3 in *(8·92 m)*	Two 2 100 hp Pratt & Whitney R-2800 radial piston engines		Used by Greek, Spanish and Yugoslav Air Forces and Royal Thai Navy for search and rescue (not by Canada)

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
CANADA									
Grumman									
CS2F-3 Tracker (CP-121)	15	F/W A/S	C	USA	Some in storage				
Lockheed									
Aurora (CP-140)	18	F/W Maritime Patrol	C	USA	Deliveries began in 1980 to replace Argus				
CHILE									
Embraer									
EMB-111A	6	F/W Maritime Reconnaissance	C	Brazil					
Bell									
JetRanger	4	Helicopter	B	USA					
Aérospatiale									
Alouette III	6	Search and Rescue Helicopter	B	France					
CHINA, PEOPLE'S REPUBLIC									
Harbin									
H-5 (Il-28T) ("Beagle")	150	F/W Torpedo Bomber	C	USSR (built in China)	14 765 ft *(4 500 m)* 485 knots	40 350 ft *(12 300 m)*	at 415 knots *(770 km/h)* 1 175 n. miles		46 740 lb *(21 200 kg)*
Beriev									
Be-6 ("Madge")	20	F/W Maritime Reconnaissance Flying-boat	C	USSR					
Shenyang									
J-5 (MiG-17F) ("Fresco")	300	F/W Fighter	C	USSR (built in China)	9 845 ft *(3 000 m)* 617 knots	54 450 ft *(16 600 m)*	with ext tanks 755 n. miles		13 380 lb *(6 070 kg)*
Shenyang									
J-6 (MiG-19SF) ("Farmer")	200	F/W Fighter	C	USSR (built in China)	32 800 ft *(10 000 m)* 783 knots	58 725 ft *(17 900 m)*	with ext tanks 1 187 n. miles	2 hrs 38 min	19 180 lb *(8 700 kg)*
Nanchang									
Q-5 ("Fantan")	100	F/W Fighter	C	China	nearly Mach 2	52 500 ft *(16 000 m)*	combat radius 430 n. miles		23 590 lb *(10 700 kg)*
Harbin									
Z-5 (Mi-4) ("Hound")	50	A/S and Search and Rescue Helicopter	B	USSR (built in China)					
DENMARK									
Gulfstream American									
Gulfstream III	3 ordered	F/W Maritime Patrol	C	USA	Operated by Royal Danish Air Force				
Aerospatiale									
Alouette III	8	Helicopter	B	France	Flown from frigates				
Westland									
Lynx Mk 80	8	Helicopter	B	UK	For fishery patrol from frigates				
EGYPT									
Westland									
Sea King Mk 47	6	A/S Helicopter	B	UK					
FRANCE									
Breguet									
Br 1050 Alizé	28	F/W A/S	A	France	10 000 ft *(3 050 m)* 254 knots	26 250 ft *(8 000 m)*	normal 1 350 n. miles	7 hrs 40 min	18 100 lb *(8 200 kg)*
Vought									
Crusader F-8E(FN)	25	F/W Interceptor	A	USA					
Dassault									
Etendard IV-M, IV-P	42	F/W Attack, Recce	A	France	36 000 ft *(11 000 m)* Mach 1·02	49 000 ft *(15 000 m)*	at 442 knots *(820 km/h)* with ext tanks 1 520 n. miles		22 650 lb *(10 275 kg)*
Dassault									
Super Etendard	71 ordered	F/W Fighter	A	France	36 000 ft *(11 000 m)* approx Mach 1	45 000 ft *(13 700 m)*	with anti-ship missile 390 n. miles		26 455 lb *(12 000 kg)*
Aerospatiale									
Super Frelon SA321G	20	A/S and Minesweeping Helicopter	B	France	at S/L 148 knots	10 325 ft *(3 150 m)*	at S/L 442 n. miles		28 660 lb *(13 000 kg)*
Aerospatiale									
Alouette III/IIIASW	40	General-Purpose/ A/S Helicopter	B	France	at S/L 113 knots	10 500 ft *(3 200 m)*	290 n. miles		4 840 lb *(2 200 kg)*
Westland/Aérospatiale									
Lynx Mk 2	40 ordered	A/S Helicopter	B	UK/ France					
Breguet									
Br 1150 Atlantic	35	F/W Long-Range Maritime Patrol	C	France	High altitude 355 knots	32 800 ft *(10 000 m)*	4 854 n. miles	at 169 knots 18 hours	95 900 lb *(43 500 kg)*
Aerospatiale									
N262/Frégate	19	F/W Transport	C	France	208 knots	23 500 ft *(7 160 m)*	with max payload 525 n. miles		23 370 lb *(10 600 kg)*
Lockheed									
Neptune (SP-2H)	12	F/W Maritime Patrol	C	USA					
Dassault									
Falcon Gardian	5 ordered	F/W Maritime Patrol	C	France	33 000 ft *(10 050 m)* 470 knots	41 000 ft *(12 500 m)*	2 520 n. miles		31 000 lb *(14 060 kg)*
GABON									
Embraer									
EMB-111	1	F/W Maritime Reconnaissance	C	Brazil	Operated by Gabon Air Force				

Wing span *Rotor diameter*	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
70 ft 4·75 in *(21·45 m)*	57 ft 10·75 in *(17·65 m)*	21 ft 11·75 in *(6·70 m)*	Two Klimov VK-1A turbojets	Two torpedoes	
31 ft 7 in *(9·63 m)*	36 ft 4·75 in *(11·09 m)*	12 ft 5·5 in *(3·80 m)*	One Klimov VK-1A turbojet	One 37 mm and two 23 mm cannon, 32 rockets or 1 100 lb *(500 kg)* bombs	
30 ft 2·25 in *(9·2 m)*	48 ft 10·5 in *(14·9 m)*	12 ft 8·75 in *(3·88 m)*	Two Shenyang WP-6 turbojets (Chinese development of Tumansky R-9BF)	Three 30 mm cannon, rockets, bombs	J-5jia (MiG-17PF) limited all-weather version also operational
33 ft 5 in *(10·2 m)*	50 ft *(15·25 m)*		Two Shenyang WP-6 turbojets (Chinese development of Tumansky R-9BF)	Two 30 mm cannon, rockets, bombs, air-to-air missiles	Evolved from J-6
51 ft 2 in *(15·6 m)*	45 ft 6 in *(13·86 m)*	16 ft 5 in *(5 m)*	One 2 100 eshp Rolls-Royce Dart R.Da 21 turboprop	Depth charges, torpedo, rockets, AS.12 missiles	Those embarked on *Clemenceau* and *Foch* are fitted to carry 2 Matra R530 missiles each
31 ft 6 in *(9·6 m)*	47 ft 3 in *(14·4 m)*	14 ft 1 in *(4·3 m)*	One SNECMA Atar 8B turbojet	Two 30 mm cannon, 3 000 lb *(1,360 kg)* rockets, bombs, Sidewinder missiles	
31 ft 6 in *(9·6 m)*	46 ft 11·5 in *(14·31 m)*	12 ft 8 in *(3·86 m)*	One SNECMA Atar 8K-50 turbojet	Two 30 mm cannon, rockets, bombs, missiles	Deliveries started in 1978
62 ft *(18·9 m)*	75 ft 6·63 in *(23·03 m)*	23 ft 10·25 in *(6·66 m)*	Three 1 550 shp Turbomeca Turmo III C6 turboshaft engines	Four homing torpedoes, search radar, sonar Provision for 27 passengers	
36 ft 1·75 in *(11·02 m)*	42 ft 1·5 in *(12·84 m)*	9 ft 10 in *(3 m)*	One 570 shp Turbomeca Artouste IIIB turboshaft engine	Provision for gun, missiles, torpedoes, MAD equipment	
119 ft 1 in *(36·3 m)*	104 ft 2 in *(31·75 m)*	37 ft 2 in *(11·33 m)*	Two 6 106 ehp Rolls-Royce Tyne R.Ty.20 Mk 21 turboprop engines	Bombs, depth charges, homing torpedoes, rockets or ASMs	
71 ft 10 in *(21·9 m)*	63 ft 3 in *(19·28 m)*	20 ft 4 in *(6·21 m)*	Two 1 080 hp Turbomeca Bastan VIC turboprop engines	Seating for 29	Used by French Navy as light transports and aircrew trainers
53 ft 6 in *(16·3 m)*	56 ft 3 in *(17·15 m)*	17 ft 5 in *(5·32 m)*	Two Garrett ATF 3-6-2C turbofans		To replace Neptunes

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
GERMANY, FEDERAL REPUBLIC									
Westland									
Sea King Mk 41	21	Maritime Attack, Search and Rescue Helicopter	B	UK					
Westland									
Lynx Mk 88	12	A/S Helicopter	B	UK	For operation from frigates				
Breguet									
Br 1150 Atlantic	19	F/W Maritime Patrol and Elint	C	France					
Dornier									
Do 28D-2 Skyservant	20	F/W General Duty	C	West Germany	10 000 ft *(3 050 m)* 175 knots	25 200 ft *(7 680 m)*	1 090 n. miles		8 470 lb *(3 842 kg)*
Lockheed									
Starfighter (F-104G)	110	F/W Fighter	C	USA (built in West Germany)	To be replaced by Panavia Tornado Includes RF-104G				
Panavia									
Tornado	112 ordered	Swing-wing Strike and Reconnaissance	C	West Germany/ Italy/UK	36 000 ft *(11 000 m)* 1 261 knots		750 n. miles radius of action		45 000-58 400 lb *(20 411-26 490 kg)*
MBB									
BO 105		Helicopter	B	West Germany	145 knots	17 000 ft *(5 180 m)*	355 n. miles		5 291 lb *(2 400 kg)*
GREECE									
Grumman									
Albatross (HU-16B)	8	F/W Maritime Patrol Amphibian	C	USA	Equipped for A/S role Operated by Greek Air Force				
Aerospatiale									
Alouette III	4	A/S and Search and Rescue Helicopter	B	France	Operated from ships				
Agusta-Bell									
212ASW	16	A/S Helicopter	B	Italy					
INDIA									
Ilyushin									
Il-38 ("May")	3	F/W Maritime Patrol	C	USSR					
Pilatus Britten-Norman									
Defender	5	F/W Maritime Patrol	C	UK					
Breguet									
Br 1050 Alizé	17	F/W A/S	A	France					
British Aerospace									
Sea Harrier FRS 51	6	F/W V/STOL Strike and Recce	A	UK	Order includes also 2 Harrier T60 trainers				
Armstrong Whitworth									
Sea Hawk	22	F/W Fighter-Bomber	A	UK	Max cruise speed at S/L 512 knots				16 200 lb *(7 355 kg)*
Aerospatiale									
Alouette III/Chetak	20	Helicopter	B	France	Chetak is Indian-built Alouette III				
Westland									
Sea King Mk 42/42A	15	A/S Helicopter	B	UK					
Kamov									
Ka-25 ("Hormone")	5	Helicopter	B	USSR					
INDONESIA									
Aerospatiale									
Alouette III	3	Helicopter	B	France					
MBB/Nurtanio									
NBO 105C	6	Helicopter	B	West Germany (built in Indonesia)					
Grumman									
Albatross (HU-16A)	6	F/W Maritime Patrol Amphibian	C	USA	Operated by Indonesian Air Force				
GAF									
Search Master B	12	F/W Maritime Patrol	C	Australia					
Search Master L	6								
IRAN									
Lockheed									
Orion (P-3F)	6	F/W Maritime Patrol	C	USA	Operated by Iranian Air Force				
Agusta-Sikorsky									
Sea King (SH-3D)	20	A/S Helicopter	B	USA (built in Italy)					
Sikorsky									
RH-53D	6	Mine Countermeasures Helicopter	B	USA					
Agusta-Bell									
212ASW	6	Anti-ship Helicopter	B	Italy					
IRAQ									
Aerospatiale									
Super Frelon SA321H	8	A/S Helicopter	B	France	Operated by Iraqi Air Force				
Agusta-Bell									
212ASW	8	A/S Helicopter	B	Italy	Operated by Iraqi Air Force				
ISRAEL									
IAI									
1124 Sea Scan	3	F/W Coastal Patrol	C	Israel	471 knots	45 000 ft *(13 725 m)*	2 500 n. miles	more than 8 hrs	23 500 lb *(10 660 kg)*

Wing span *Rotor diameter*	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
51 ft 0·25 in *(15·55 m)*	37 ft 5·25 in *(11·41 m)*	12 ft 9·5 in *(3·9 m)*	Two 380 hp Lycoming IGSO-540-A1E piston engines	Seating for 12 or 13	Maritime Reconnaissance version, with undernose radar, ordered by Morocco
Swept: 28 ft 2·5 in *(8·6 m)*	54 ft 9·5 in *(16·7 m)*	18 ft 8·5 in *(5·7 m)*	Two Turbo-Union RB.199-34R-4 turbojets	Two 27 mm cannon, bombs, missiles	To equip MFG1 and 2, beginning in 1982. Performance achieved with development engines
32 ft 3·4 in *(9·84 m)*	38 ft 11 in *(11·86 m)*	9 ft 10 in *(3 m)*	Two 420 shp Allison 250-C20B turboshaft engines	Seating for five. Up to six air-to-surface missiles optional	Used by Indonesian and Philippine Navies (not by West German Navy)
39 ft *(11·89 m)*	39 ft 8 in *(12·09 m)*	8 ft 8 in *(2·64 m)*	One Rolls-Royce Nene 103 turbojet	Cannon, bombs or rockets	Operational in carrier *Vikrant*
44 ft 9·5 in *(13·65 m)*		15 ft 9·5 in *(4·81 m)*	Two Garrett-AiResearch TFE 731 turbofans	Equipment includes search radar, IFF, MAD, LLLTV	

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
ITALY									
Agusta-Sikorsky SH-3D Sea King	24	A/S Helicopter	B	USA (built in Italy)					
Agusta-Sikorsky HH-3F	12	Maritime Search and Rescue Helicopter	B	USA (built in Italy)	at S/L 136 knots	11 500 ft *(3 500 m)*	mission radius 300 n. miles		22 050 lb (10 000 kg)
Agusta-Bell 204AS	34	A/S Helicopter	B	Italy	at S/L 104 knots	4 500 ft *(1 370 m)*	340 n. miles		9 500 lb *(4 310 kg)*
Agusta-Bell 212ASW	42	A/S Helicopter	B	Italy	at S/L 106 knots	17 000 ft *(5 180 m)*	360 n. miles	5 hrs	11 176 lb *(5 070 kg)*
Breguet Br 1150 Atlantic	18	F/W Long-Range Maritime Patrol	C	France	Operated by Italian Air Force				
Piaggio P.166S Albatross		F/W Coastal Patrol	C	Italy	9 500 ft *(2 900 m)* 193 knots	25 500 ft *(7 770 m)*			8 115 lb *(3 680 kg)*
JAPAN									
Mitsubishi-Sikorsky Sea King (SH-3A)	78	A/S Helicopter	B	USA (built in Japan)					
Kawasaki-Boeing Vertol KV 107/II-3	9	Mine Countermeasures Helicopter	B	USA (built in Japan)					
Grumman Tracker (S-2A)	23	F/W A/S	C	USA					
Kawasaki-Lockheed P-2J	77	F/W A/S and Maritime Patrol Bomber	C	Japan	Max cruising 217 knots	30 000 ft *(9 150 m)*	with max fuel 2 400 n. miles		75 000 lb *(34 019 kg)*
Kawasaki-Lockheed Neptune (SP-2H)	11	F/W A/S and Maritime Patrol Bomber	C	USA (built in Japan)					
Kawasaki-Lockheed P-3J Orion	45 ordered	F/W Maritime Patrol	C	USA (built in Japan)	Deliveries to begin in 1981				
Shin Meiwa PS-1	19	F/W A/S Flying-Boat	C	Japan	Max level at 5 000 ft *(1 525 m)* 295 knots	29 500 ft *(9 000 m)*	1 169 n. miles	15 hrs	94 800 lb *(43 000 kg)*
KOREA, REPUBLIC									
Grumman Tracker (S-2A/F)	20	F/W A/S	C	USA					
MEXICO									
Grumman Albatross (HU-16A)	11	F/W Maritime Patrol, Search and Rescue Amphibian	C	USA					
Aerospatiale Alouette III	2	Helicopter	B	France					
MOROCCO									
Dornier Do 28D-2 Skyservant	10 ordered	F/W Maritime Patrol	C	West Germany	Operated by Royal Moroccan Air Force				
NETHERLANDS									
Westland Wasp (HAS Mk 1) (AH-12A)	10	A/S, Search and Rescue Helicopter	B	UK					
Westland Lynx (SH-14B/C)	24	A/S Helicopter	B	UK/France	First six (UH-14A) used for Search and Rescue				
Breguet Br 1150 Atlantic (SP-13A)	7	F/W A/S	C	France					
Lockheed Neptune (SP-2H)	13	F/W Maritime Patrol	C	USA					
Lockheed Orion (P-3C)	13	F/W Maritime Patrol	C	USA	Deliveries to begin late 1981				
Fokker F.27 Maritime	2	F/W Maritime Patrol	C	Netherlands	250 knots (cruising)	29 500 ft *(8 990 m)*	2 700 n. miles	10-12 hrs	45 000 lb *(20 410 kg)*
NEW ZEALAND									
Westland Wasp (HAS Mk 1)	2	A/S Helicopter	B	UK					
Lockheed Orion (P-3B)	5	F/W Maritime Patrol	C	USA	Operated by Royal New Zealand Air Force				
NORWAY									
Westland Sea King Mk 43	11	Search and Rescue Helicopter	B	UK	Operated by Royal Norwegian Air Force				
Westland Lynx Mk 86	6	Maritime Patrol Helicopter	B	UK/France	Operated by Royal Norwegian Air Force				
Lockheed Orion (P-3B)	7	F/W Maritime Patrol	C	USA	Operated by Royal Norwegian Air Force				
PAKISTAN									
Breguet Br 1150 Atlantic	3	F/W A/S	C	France	Operated by Pakistan Air Force				
Westland Sea King Mk 45	6	A/S Helicopter	B	UK					
Grumman Albatross (HU-16A)	2	F/W Maritime Patrol Amphibian	C	USA	Operated by Pakistan Air Force				

Wing span *Rotor diameter*	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
62 ft *(18·9 m)*	73 ft *(22·25 m)*	18 ft 1 in *(5·51 m)*	Two 1 500 shp General Electric T58-GE-100 turboshaft engines		Operated by Italian Air Force
48 ft *(14·63 m)*	57 ft *(17·37 m)*		One 1 290 shp General Electric T58-GE-3 turboshaft engine	Two Mk 44 torpedoes, dipping sonar	
48 ft *(14·63 m)*	57 ft 1 in *(17·4 m)*	14 ft 5 in *(4·4 m)*	One 1 875 shp Pratt & Whitney (Canada) PT6T-6 Turbo Twin Pac twin turboshaft engine	Two Mk 44 or Mk 46 torpedoes, depth charges, missiles, dipping sonar	
46 ft 9 in *(14·25 m)*	38 ft 1 in *(11·6 m)*	16 ft 5 in *(5 m)*	Two 340 hp Lycoming GSO-480-B1C6 piston engines		Used by South African Air Force (not by Italy)
97 ft 8·5 in *(29·78 m)*	95 ft 10·75 in *(29·23 m)*	29 ft 3·5 in *(8·93 m)*	Two General Electric T64-IHI-10E turboprop engines and two pod-mounted J3-IHI-7D turbojets	Classified; equipment includes radar, smoke detector and MAD	
108 ft 9 in *(33·15 m)*	109 ft 9·25 in *(33·46 m)*	32 ft 2·75 in *(9·82 m)*	Four Ishikawajima-built General Electric T64-IHI-10 turboprop engines each 3 060 ehp	Torpedoes, air-to-surface rockets, bombs, radar, MAD, sonobuoys	Also 8 US-1 search and rescue amphibians
95 ft 2 in *(29 m)*	77 ft 3·5 in *(23·56 m)*	28 ft 6·5 in *(8·7 m)*	Two 2 320 shp Rolls-Royce Dart 536-7R turboprop engines	Normally unarmed. Equipment includes underfuselage radome	

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
PAPUA NEW GUINEA									
GAF									
Search Master B	2	F/W Maritime patrol	C	Australia					
PERU									
Grumman									
Tracker (S-2E)	9	F/W A/S	C	USA					
Grumman									
Albatross (HU-16B)	4	F/W Maritime Patrol and Search and Rescue Amphibian	C	USA	Operated by Peruvian Air Force				
Agusta-Sikorsky									
SH-3D Sea King	1	A/S Helicopter	B	USA (built in Italy)					
Agusta-Bell									
212ASW	12	A/S Helicopter	B	Italy					
Bell									
UH-1D/H	6	Helicopter	B	USA					
Bell									
JetRanger	10	Helicopter	B	USA					
Aerospatiale									
Alouette III	2	Helicopter	B	France					
Fokker									
F.27 Maritime	2	F/W Maritime Patrol	C	Netherlands					
PHILIPPINES									
Fokker									
F.27 Maritime	3	F/W Maritime Patrol	C	Netherlands	Operated by Philippine Air Force				
PADC-Pilatus Britten-Norman									
Defender	5	F/W Maritime Patrol, Search and Rescue	C	UK (built in Philippines)					
PADC-MBB									
BO 105	5	Helicopter	B	West Germany (built in Philippines)					
POLAND									
Ilyushin									
Il-28 ("Beagle")	8	F/W Recce and ECM	C	USSR					
MiG-17F									
(LiM-6)	42	F/W Fighter	C	USSR (built in Poland)					
WSK-PZL Swidnik									
Mi-2 ("Hoplite")	12	Helicopter	B	Poland	113 knots	13 125 ft *(4 000 m)*	313 n. miles	5 hrs	8 157 lb *(3 700 kg)*
PORTUGAL									
Lockheed									
Hercules (C-130H)	5	F/W Transport/ Maritime Patrol	C	USA	Operated by Portuguese Air Force. Maritime role secondary				
SOUTH AFRICA									
Westland									
Wasp (HAS Mk 1)	11	A/S Helicopter	B	UK	Embarked in Destroyers: *Jan Van Riebeeck; Simon van der Stel* Embarked in Frigates: *President Kruger; President Pretorius; President Steyn*				
Avro									
Shackleton MR.3	7	F/W Long-range Maritime Patrol	C	UK	Operated by South African Air Force				
Piaggio									
P.166S Albatross	18	F/W Coastal Patrol	C	Italy	Operated by South African Air Force				
SPAIN									
British Aerospace									
Matador (AV-8S Harrier) (VA.1)	9	F/W V/STOL Strike/Recce	A	UK	Supplied via USA for operation from carrier *Dedalo* (+two two-seat TAV-8S; VAE.1)				
Agusta-Bell									
212ASW (Z.18)	14	A/S Helicopter	B	Italy					
Agusta-Bell									
204AS (Z.8)	4	Search and Rescue Helicopter	B	Italy					
Bell									
AH-1G HueyCobra (Z.14)	6	Armed Helicopter	B	USA					
Sikorsky									
Sea King (SH-3D/G) (Z.9/9A)	17	A/S Helicopter	B	USA					
Lockheed									
Orion (P-3A) (P.3)	6	F/W Maritime Patrol	C	USA	Operated by Spanish Air Force				
Canadair									
CL-215 (UD.13)	14	Search and Rescue, F/W Amphibian	C	Canada	Operated by Spanish Air Force				
Fokker									
F.27 Maritime	3	F/W Search and Rescue	C	Netherlands	Operated by Spanish Air Force				
Hughes									
500M-D (Z.13)	12	A/S Helicopter	B	USA					
SWEDEN									
Agusta-Bell									
206A JetRanger (HKP 6)	10	Search and Rescue Helicopter	B	USA					
Boeing Vertol-Kawasaki									
KV-107/II (HKP 4)	19	A/S and General Duty Helicopter	B	USA (built in Japan)	Some operated by Swedish Air Force				
Saab-Scania									
SH 37 Viggen	24	F/W Maritime Recce	C	Sweden	Mach 2				
SYRIA									
Kamov									
Ka-25 ("Hormone")	9	A/S Helicopter	B	USSR					

Wing span *Rotor diameter*	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
47 ft 9·25 in *(14·56 m)*	57 ft 2 in *(17·42 m)*	12 ft 3·5 in *(3·75 m)*	Two 450 shp Isotov GTD-350P turboshaft engines	Rocket pods or four air-to-surface missiles	
34 ft 9·25 in *(10·6 m)*	53 ft 5·75 in *(16·3 m)*	19 ft 0·25 in *(5·8 m)*	One Volvo Flygmotor RM8A turbofan	Two air-to-air missiles Provision for attack weapons	Operated by Swedish Air Force

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
TAIWAN									
Grumman Tracker (S-2A)	9	F/W A/S	C	USA					
Grumman Albatross (HU-16B)	8	F/W Search and Rescue Amphibian	C	USA					
Hughes 500M-D	12	A/S Helicopter	B	USA					
THAILAND									
Summit (Cessna) O2-337 Sentry	6	F/W Counter-Insurgency	C	USA					
Grumman Tracker (S-2F)	10	F/W A/S, Maritime Patrol	C	USA					
Canadair CL-215	2	Search and Rescue, F/W Amphibian	C	Canada					
Grumman Albatross (HU-16B)	2	F/W Search and Rescue Amphibian	C	USA					
Bell 212ASW	8	A/S Helicopter	B	USA					
TURKEY									
Agusta-Bell 204AS	3	A/S Helicopter	B	Italy					
Agusta-Bell 212ASW	16	A/S Helicopter	B	Italy					
Grumman Tracker (S-2E)	12	F/W A/S	C	USA					
UNION OF SOVIET SOCIALIST REPUBLICS									
Yakovlev Yak-36MP ("Forger-A")	50	F/W VTOL Attack and Reconnaissance	A	USSR	Mach 1·3	39 375 ft *(12 000 m)*			22 050 lb *(10 000 kg)*
Mil Mi-14 ("Haze")	50	A/S Helicopter	C	USSR					26 455 lb *(12 000 kg)*
Mil Mi-4 ("Hound-B")		A/S Helicopter	B	USSR	113 knots	18 000 ft *(5 500 m)*	217 n. miles		17 200 lb *(7 800 kg)*
Kamov Ka-25 ("Hormone")	250 approx	A/S and Missile Guidance Helicopter	B	USSR	113 knots	11 500 ft *(3 500 m)*	350 n. miles		16 500 lb *(7 500 kg)*
Tupolev Tu-22M (Tu-26) ("Backfire-B")	50	V/G Recce Bomber	C	USSR	approx Mach 2		approx 4 350 n. miles		270 000 lb *(122 500 kg)*
Myasishchev M-4 ("Bison-B/C")	10	F/W Maritime Reconnaissance	C	USSR	at 10 000 ft 572 knots	51 200 ft *(15 600 m)*	5 940 n. miles		375 000 lb *(170 000 kg)*
Tupolev Tu-16 ("Badger")	425	F/W Long-Range Bomber/Maritime Recce/ECM	C	USSR	at 20 000 ft 535 knots	40 350 ft *(12 300 m)*	with max bomb load 2 605 n. miles		158 730 lb *(72 000 kg)*
Tupolev Tu-142 ("Bear-C/D/E/F")	75	F/W Long-Range Bomber/Maritime Recce	C	USSR	at 41 000 ft 435 knots		with max load 6 775 n. miles		414 470 lb *(188 000 kg)*
Tupolev Tu-22 ("Blinder")	40	F/W Recce Bomber	C	USSR	at 40 000 ft Mach 1·4	60 000 ft *(18 300 m)*	1 215 n. miles		185 000 lb *(83 900 kg)*
Sukhoi Su-17 ("Fitter-C/D")	50	V/G Anti-shipping and Close Support Fighter	C	USSR	Mach 2·17	59 050 ft *(18 000 m)*	Combat radius 195-340 n. miles		39 020 lb *(17 700 kg)*
Beriev Be-6 ("Madge")		F/W Maritime Patrol Flying-boat	C	USSR	224 knots	20 000 ft *(6 100 m)*	2 600 n. miles		61 975 lb *(28 112 kg)*
Beriev M-12 ("Mail")	80	F/W A/S Recce Amphibian	C	USSR	329 knots	37 000 ft *(11 280 m)*	2 160 n. miles		64 925 lb *(29 450 kg)*
Ilyushin Il-18 ("Coot-A")	10	F/W Maritime Recce, Elint	C	USSR	360 knots				141 100 lb *(64 000 kg)*
Ilyushin Il-38 ("May")	55	F/W A/S Recce	C	USSR	347 knots	32 800 ft *(10 000 m)*	3 900 n. miles		
UNITED KINGDOM									
British Aerospace Harrier (AV-8A)		F/W V/STOL Strike and Recce	A	UK	over 640 knots	over 50 000 ft *(15 240 m)*	over 3 000 n. miles with one flight refuelling		over 25 000 lb *(11 339 kg)*
British Aerospace Sea Harrier (FRS.1)	34 ordered	F/W V/STOL Strike and Recce	A	UK	over 640 knots		Combat radius 250-400 n. miles		
Westland/Aerospatiale Gazelle HT.2	36	Training Helicopter	B	UK France	at S/L 167 knots	16 400 ft *(5 000 m)*	at S/L with full fuel 361 n. miles		3 970 lb *(1 800 kg)*
Westland Lynx (HAS.2)	80 ordered	Search and Strike Helicopter	B	UK	125 knots (cruising)		320 n. miles	Time on station 2 hrs 29 min	10 500 lb *(4 763 kg)*
Westland Sea King (HAS.1/2A/5)	48	A/S Helicopter	B	UK	Normal operating 112 knots	10 000 ft *(3 050 m)*	664 n. miles with normal fuel		21 000 lb *(9 525 kg)*
Westland Sea King (HAR.3)	16	Search and Rescue Helicopter	B	UK	Cruising speed at S/L 112 knots	10 000 ft *(3 050 m)*	664 n. miles with normal fuel		21 000 lb *(9 525 kg)*
Westland Sea King (HC.4)	15	Troop/cargo-carrying Helicopter	B	UK	Normal operating 112 knots	10 000 ft *(3 050 m)*	240 n. miles with max load		21 000 lb *(9 525 kg)*
Westland Wasp (HAS.1)	65	General Purpose and A/S Helicopter	B	UK	at S/L 104 knots		approx 234 n. miles		5 600 lb *(2 495 kg)*

Wing span / Rotor diameter	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
23 ft *(7 m)*	49 ft 3 in *(15 m)*		One conventional turbojet and two lift-jets	Gun pods and rocket pods	Also a two-seat training version ("Forger-B")
69 ft 10·25 in *(21·29 m)*			Two 2 200 shp Isotov turboshaft engines		Similar to Mi-8 transport, but with retractable landing gear, undernose radome, towed MAD, boat hull, etc
68 ft 11 in *(21 m)*	55 ft 1 in *(16·8 m)* (fuselage only)	17 ft *(5·18 m)*	One 1 700 hp Shvetsov ASh-82V piston engine	Sonobuoys, MAD, undernose radar, etc	Superseded in Soviet Navy by Mi-14 and Ka-25
51 ft 8 in *(15·75 m)*	51 ft 8 in *(15·75 m)*	17 ft 7·5 in *(5·37 m)*	Two 900 shp Glushenkov GTD-3 turboshaft engines	A/S torpedoes, flares, small stores	
*113 ft *(34·45 m)*	132 ft *(40·23 m)*	33 ft *(10·06 m)*	Possibly two Kuznetsov turbofans	Air-to-surface missile. Two guns in tail mounting	
165 ft 7·5 in *(50·48 m)*	154 ft 10 in *(47·2 m)*	46 ft *(14·1 m)*	Four Soloviev D-15 turbojets	Six 23 mm cannon. 10 000 lb *(4 535 kg)* of bombs, missiles, etc	Data for "Bison-B"
108 ft 5 in *(32·93 m)*	114 ft 2 in *(34·8 m)*	35 ft 6 in *(10·8 m)*	Two Mikulin AM-3 turbojets	Up to seven 23 mm cannon in dorsal, ventral and tail turrets and nose. 19 800 lb *(9 000 kg)* of bombs or missiles	Total includes 80 flight refuelling tankers
167 ft 8 in *(51·1 m)*	162 ft 5 in *(49·5 m)*	39 ft 9 in *(12·12 m)*	Four 14 795 ehp Kuznetsov NK-12MV turboprops	Bombs, missiles, two to six 23 mm cannon	Dimensions and weight: "Bear-F" Performance: "Bear-A"
90 ft 10·5 in *(27·7 m)*	132 ft 11·5 in *(40·53 m)*	35 ft *(10·67 m)*	Two turbojets with afterburners	Cameras. Provision for bombs and missiles	Data for "Blinder-C"
*45 ft 11·25 in *(14 m)*	61 ft 6·25 in *(18·75 m)*	15 ft 7 in *(4·75 m)*	One Lyulka AL-21F-3 afterburning turbojet	Two 30 mm cannon. 11 023 lb *(5 000 kg)* of bombs, rockets, missiles	Data for "Fitter-C". "Fitter-D" has undernose radar
108 ft 3 in *(33 m)*	77 ft 3·5 in *(23·56 m)*		Two 2 300 hp Shvetsov ASh-73TK piston engines	Five guns. Up to 9 700 lb *(4 400 kg)* of bombs	Operated by Chinese Navy (not by USSR)
97 ft 6 in *(29·7 m)*	99 ft *(30·2 m)*	22 ft 11·5 in *(7 m)*	Two 4 000 shp Ivchenko AI-20D turboprops	Torpedoes, depth charges, sonobuoys, MAD gear, nose radome	
122 ft 8·5 in *(37·4 m)*	117 ft 9 in *(35·9 m)*	33 ft 4 in *(10·16 m)*	Four 4 250 ehp Ivchenko AI-20 turboprops	Equipment includes side-looking radar	
122 ft 8·5 in *(37·4 m)*	129 ft 10 in *(39·6 m)*	33 ft 4 in *(10·16 m)*	Four 4 250 ehp Ivchenko AI-20 turboprops	A/S weapons, MAD gear, undernose radar	
25 ft 3 in *(7·7 m)*	45 ft 6 in *(13·87 m)*	11 ft 4 in *(3·45 m)*	One Rolls-Royce Pegasus 103 vectored-thrust turbofan engine	Aden gun pods, bombs, rockets, Sidewinder missiles, flares, camera	In service with USMC and Spain (Matador)
25 ft 3·25 in *(7·7 m)*	47 ft 7 in *(14·5 m)*	12 ft 2 in *(3·71 m)*	One Rolls-Royce Pegasus 104 vectored-thrust turbofan engine	Aden gun pods, bombs, rockets, Sidewinder missiles, air-to-surface missiles, etc	Ordered also by India
34 ft 5·75 in *(10·5 m)*	39 ft 3·25 in *(11·97 m)*	10 ft 2·25 in *(3·15 m)*	One 590 shp Turbomeca Astazou IIIA turboshaft engine		
42 ft *(12·8 m)*	49 ft 9 in *(15·16 m)*	11 ft 9·75 in *(3·6 m)*	Two 900 shp Rolls-Royce Gem 2 turboshaft engines	Two Mk 44 or Mk 46 homing torpedoes, depth charges or missiles	
62 ft *(18·9 m)*	72 ft 8 in *(22·15 m)*	16 ft 10 in *(5·13 m)*	Two 1 660 shp Rolls-Royce Gnome H 1400-1 turboshaft engines	Dipping sonar type 195 system, radar, smoke floats, AD580 doppler navigation, torpedoes, depth charges, machine gun	Data for current Mk 2 version
62 ft *(18·9 m)*	72 ft 8 in *(22·15 m)*	16 ft 10 in *(5·13 m)*	Two 1 660 shp Rolls-Royce Gnome H 1400-1 turboshaft engines		Operated by Royal Air Force
62 ft *(18·9 m)*	72 ft 8 in *(22·15 m)*	16 ft 10 in *(5·13 m)*	Two 1 660 shp Rolls-Royce Gnome H 1400-1 turboshaft engines	Guns, missiles, etc, to operator's requirements	
32 ft 3 in *(9·83 m)*	40 ft 4 in *(12·29 m)*	11 ft 8 in *(3·56 m)*	One Rolls-Royce Bristol Nimbus 503 turboshaft engine, derated to 710 shp	Two Mk 44 homing torpedoes or other stores	

**wings spread*

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
UK									
Westland Wessex (HAS.1/3 & HU.5)	140	A/S, Assault and General Purpose Helicopter	B	UK	at S/L 115 knots	(HAS.1) 14 000 ft *(4 300 m)*	Max fuel 10% reserve 415 n. miles		13 500 lb *(6 120 kg)*
Hawker Siddeley Nimrod (MR.1A/2)	42	F/W Long Range Maritime Recce	C	UK	500 knots	42 000 ft *(12 800 m)*	Ferry 4 500-5 000 n. miles	12 hrs (typical)	177 500-192 000 lb *(80 510-87 090 kg)*
Avro Shackleton (MR.3)		F/W Long Range Maritime Patrol	C	UK	at S/L 152 knots		2 515 n. miles		
Hawker Siddeley (Avro) Shackleton (AEW.2)	11	F/W Airborne Early Warning	C	UK	226 knots			10 hrs	98 000 lb *(44 452 kg)*
Pilatus Britten-Norman Defender		F/W Maritime Patrol	C	UK	151 knots	17 000 ft *(5 180 m)*	1 497 n. miles		6 600 lb *(2 993 kg)*
UNITED STATES OF AMERICA									
Rockwell International Bronco OV-10A	114 built	F/W Multi-purpose Counter Insurgency	C	USA	at S/L W/O Weapons 244 knots		Ferry with aux. fuel 1 200 n. miles	Combat radius with max weapon load 198 n. miles	14 444 lb *(6 552 kg)*
Summit (Cessna) O2-337 Sentry		F/W Multi-purpose Counter Insurgency	C	USA	at 10 000 ft *(3 050 m)* 179 knots	28 500 ft *(8 690 m)*	1 175 n. miles		5 200 lb *(2 359 kg)*
Vought A-7E Corsair II	950 built	F/W Attack Aircraft	A	USA	at S/L 600 knots		Ferry 2 485 n. miles		42 000 lb *(19 050 kg)*
Vought RF-8G Crusader	40	F/W Recce	A	USA	870 knots				34 000 lb *(15 420 kg)*
Grumman C-2A Greyhound	20	F/W COD Transport	A	USA	at 11 000 ft *(3 450 m)* 306 knots		at cruising speed and height 1 432 n. miles		54 830 lb *(24 870 kg)*
Grumman Hawkeye E-2B/C	94	F/W Airborne Early Warning	A	USA	325 knots	30 800 ft *(9 390 m)*	Ferry 1 394 n. miles	6 hrs 6 min	51 900 lb *(23 541 kg)*
McDonnell Douglas F-18/A-18 Hornet	1 377 to be built	F/W Strike Fighter	A	USA	above Mach 1·8	50 000 ft *(15 250 m)*	Combat radius 400-550 n. miles		33 585-47 000 lb *(15 234-21 319 kg)*
Grumman A-6E Intruder	320	F/W Strike and Recce	A	USA	at S/L 563 knots	47 300 ft *(14 415 m)*	2 530 n. miles		60 400 lb *(27 400 kg)*
McDonnell Douglas F-4B Phantom II	645 built	F/W All Weather Fighter	A	USA	Mach 2·5	54 400 ft *(16 580 m)*	Ferry 1 718 n. miles		54 600 lb *(24 765 kg)*
McDonnell Douglas A-4M Skyhawk	200	F/W Attack Bomber	A	USA	with 4 000 lb of bombs 561 knots		Ferry 1 740 n. miles		24 500 lb *(11 113 kg)*
McDonnell Douglas EA-3B Skywarrior	50	F/W Electronic Countermeasures	A	USA	at 10 000 ft *(3 050 m)* 530 knots	45 000 ft *(13 780 m)*	Normal 2 520 n. miles		73 000 lb *(33 112 kg)*
Grumman F-14A Tomcat	386	F/W All Weather Fighter	A	USA	Mach 2·40	over 56 000 ft *(17 070 m)*			74 348 lb *(33 724 kg)*
Grumman S-2E Tracker		F/W A/S	A	USA	at S/L 230 knots	21 000 ft *(6 400 m)*	Ferry 1 128 n. miles	Max endurance 9 hrs	29 150 lb *(13 222 kg)*
Lockheed S-3A Viking	187 built	F/W A/S	A	USA	450 knots	over 35 000 ft *(10 670 m)*	Ferry 3 000 n. miles+		42 500 lb *(19 277 kg)*
Bell AH-1J/T SeaCobra	Total 126 built	Close Support Helicopter	B	USA	165 knots	10 000 ft *(3 050 m)*	342 n. miles	3 hr 25 min	14 000 lb *(6 350 kg)*
Hughes 500M-D/ASW Defender		A/S and Surface Search Helicopter	B	USA	152 knots	15 000 ft *(4 570 m)*	287 n. miles	1 hr 48 min on station (typical)	3 550 lb *(1 610 kg)*
Sikorsky SH-34/UH-34 Seabat/Seahorse (S-58)		A/S and General Purpose Helicopter	B	USA	at S/L 107 knots	9 000 ft	214 n. miles *(2 740 m)*	+10% reserve	14 000 lb *(6 350 kg)*
Sikorsky SH-3A/D/G/H Sea King	225	A/S and Transport Helicopter	B	USA	144 knots	14 700 ft *(4 480 m)*	542 n. miles 10% reserve		18 626 lb *(8 450 kg)*
Sikorsky SH-60B Seahawk	204-to be built	A/S and Anti-Ship Surveillance and Targeting Helicopter	B	USA	135 knots (max cruising)				21 884 lb *(9 926 kg)*
Boeing Vertol UH-46D Sea Knight	500 built	Transport and Utility Helicopter	B	USA	144 knots	14 000 ft *(4 265 m)*	approx 198 n. miles		Max 23 000 lb *(10 433 kg)*
Kaman SH-2F Seasprite	100	A/S and Anti-Ship Helicopter	B	USA	at S/L 143 knots	22 500 ft *(6 860 m)*	367 n. miles		12 800 lb *(5 805 kg)*
Sikorsky CH-53A/D Sea Stallion	150	Assault Transport Helicopter	B	USA	70 knots	21 000 ft *(6 400 m)*	223 n. miles		42 000 lb *(19 050 kg)*
Sikorsky CH-53E	49 ordered	Heavy-duty Multi-purpose Helicopter	B	USA	170 knots	18 500 ft *(5 640 m)*	1 120 n. miles		73 500 lb *(33 339 kg)*
Sikorsky RH-53D	23	Mine Countermeasures Helicopter	B	USA				over 4 hr	50 000 lb *(22 680 kg)*
Bell UH-1E	150	Assault Support Helicopter	B	USA	140 knots	21 000 ft *(6 400 m)*	248 n. miles		9 500 lb *(4 309 kg)*

Wing span / Rotor diameter	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
56 ft *(17·07 m)*	65 ft 9 in *(20·03 m)*	16 ft 2 in *(4·93 m)*	One Rolls-Royce Bristol Gnome 112 and one Gnome 113 turboshaft engines, each 1 350 shp	Up to 13 troops or 7 stretchers A/S version (HAS.1) can carry weapons	
114 ft 10 in *(35 m)*	126 ft 9 in *(38·63 m)*	29 ft 8·5 in *(9·08 m)*	Four Rolls-Royce RB168 Spey Mk 250 turbofan engines	Bombs, torpedoes, MAD, full range ASW detection equipment	Operated by Royal Air Force. AEW version on order to replace Shackleton
119 ft 10 in *(36·52 m)*	87 ft 4 in *(26·52 m)*	23 ft 4 in *(7·11 m)*	Four Rolls-Royce Griffon 57A piston engines, 2 455 hp each		Operated by South African Air Force
119 ft 10 in *(36·52 m)*	92 ft 6 in *(28·19 m)*	23 ft 4 in *(7·11 m)*	Four Rolls-Royce Griffon 67 piston engines, 2 450 hp each	Early warning electronics	Operated by Royal Air Force
53 ft *(16·15 m)*	36 ft 3·75 in *(11·07 m)*	13 ft 8·75 in *(4·18 m)*	Two 300 hp Lycoming IO-540-K1B5 piston engines	Two 7·62 mm machine guns, bombs, rocket packs, air-to-surface missiles, etc. Search radar	Not used by Royal Navy
40 ft *(12·19 m)*	41 ft 7 in *(12·67 m)*	15 ft 2 in *(4·62 m)*	Two 715 ehp Garrett-AiResearch T76-G-416/417 turboprops	4 × 0·30 in machine guns, air-to-air missiles, bombs, rockets, etc. Max weapon load 3,600 lb *(1,633 kg)*	17 converted to OV-10D night observation surveillance role
38 ft 2 in *(11·63 m)*	29 ft 9 in *(9·07 m)*	9 ft 2 in *(2·79 m)*	Two 225 hp Continental TSIO-360 piston engines	Two machine gun pods, bombs, rockets, etc.	Operated by Royal Thai Navy (not by US Navy)
38 ft 9 in *(11·8 m)*	46 ft 1·5 in *(14·06 m)*	16 ft 0·75 in *(4·9 m)*	One Allison TF41-A-2 turbofan	Air-to-air, air-to-surface missiles, guns, rockets, bombs, drop tanks	Total includes A-7A/B/C
35 ft 8 in *(10·87 m)*	54 ft 6 in *(16·61 m)*	15 ft 9 in *(4·8 m)*	One Pratt & Whitney J57-P-20 turbojet		
80 ft 7 in *(24·56 m)*	56 ft 8 in *(17·27 m)*	15 ft 11 in *(4·85 m)*	Two 4 050 ehp Allison T56-A-8A turboprops	10 000 lb freight	
80 ft 7 in *(24·56 m)*	57 ft 7 in *(17·55 m)*	18 ft 4 in *(5·59 m)*	Two 4 910 ehp Allison T56-A-425 turboprops	Early warning and command electronics	Data for E-2C
37 ft 6 in *(11·43 m)*	56 ft *(17·07 m)*	15 ft 3·5 in *(4·66 m)*	Two General Electric F404-GE-400 turbofans	One 20 mm gun. Up to 17 000 lb *(7 710 kg)* of air-to-air and air-to-ground weapons	Scheduled to be operational by 1982
53 ft *(16·15 m)*	54 ft 9 in *(16·69 m)*	16 ft 2 in *(4·93 m)*	Two Pratt & Whitney J52-P-8A turbojets	Bombs, missiles and other stores	
38 ft 7·5 in *(11·77 m)*	58 ft *(17·76 m)*	16 ft *(4·88 m)*	Two General Electric J79-GE-8 turbojets with afterburners	Missiles, bombs, rockets	Also F-4J (522 built), F-4N (226 updated Bs), F-4S (265 updated Js) and RF-4Bs (46 built)
27 ft 6 in *(8·38 m)*	40 ft 4 in *(12·27 m)*	15 ft *(4·57 m)*	One Pratt & Whitney J52-P-408A turbojet	Cannon, bombs, rockets, missiles	Total includes A-4E/F
72 ft 6 in *(22·07 m)*	76 ft 4 in *(23·27 m)*	22 ft 8 in *(6·91 m)*	Two Pratt & Whitney J57-P-10 turbojets	Provision for bombs, torpedoes, cannon	Total includes tankers
64 ft 1·5 in *(19·54 m)* Unswept	61 ft 11·9 in *(18·89 m)*	16 ft *(4·88 m)*	Two Pratt & Whitney TF30-P-412A turbofans with afterburners	Guns, missiles, bombs	
72 ft 7 in *(22·13 m)*	43 ft 6 in *(13·26 m)*	16 ft 7 in *(5·06 m)*	Two 1 525 hp Wright R-1820-82WA piston engines	Depth charges, torpedoes, rockets, sonobuoys	
68 ft 8 in *(20·93 m)*	53 ft 4 in *(16·26 m)*	22 ft 9 in *(6·93 m)*	Two General Electric TF34-GE-2 turbofan engines	Bombs, depth bombs, rockets, missiles, mines, torpedoes, flares	
48 ft *(14·63 m)*	58 ft *(17·68 m)*	14 ft 3·5 in *(4·36 m)*	One 2 050 shp Pratt & Whitney T400-WV-402 turboshaft engine	Cannon and rockets. Max weapon load 2 742 lb *(1 243 kg)*	Data for AH-1T
26 ft 6 in *(8·08 m)*	30 ft 6 in *(9·3 m)*	8 ft 6 in *(2·59 m)* (to top of main rotor head)	One 420 shp Allison 250-C20B turboshaft engine	Search radar, MAD, Two homing torpedoes	Not used by US Navy
56 ft *(17·07 m)*	56 ft 8·25 in *(17·27 m)*	15 ft 11 in *(4·85 m)*	One 1 525 hp Wright R-1820-84B/D piston engine	12 passengers	
62 ft *(18·9 m)*	72 ft 8 in *(22·15 m)*	16 ft 10 in *(5·13 m)*	Two 1 400 shp General Electric T58-GE-10 turboshaft engines	Torpedoes, missiles, total 840 lb *(381 kg)* of weapons	Data for SH-3D
53 ft 8 in *(16·36 m)*	64 ft 10 in *(19·76 m)*	17 ft 2 in *(5·23 m)*	Two 1 690 shp General Electric T700-GE-401 turboshaft engines	Two Mk 46 torpedoes. LAMPS equipment. Details in JAWA	
60 ft *(18·29 m)*	Fuselage 51 ft *(15·54 m)*	16 ft 8·5 in *(5·09 m)*	Two 1 400 shp General Electric T58-GE-10 turboshaft engines	Up to 10 000 lb load	Total includes CH-46s. Japanese Kawasaki KV-107 is a derivative
44 ft *(13·41 m)*	52 ft 7 in *(16·03 m)*	15 ft 6 in *(4·72 m)*	Two 1 350 shp General Electric T58-GE-8F turboshaft engines	One or two torpedoes. LAMPS equipment. Details in JAWA	
72 ft 3 in *(22·02 m)*	88 ft 3 in *(26·90 m)*	24 ft 11 in *(7·6 m)*	Two 2 850 shp General Electric T64-GE-6 turboshaft engines	37 passengers or 24 stretchers with 4 attendants	Data for CH-53D
79 ft *(24·08 m)*	99 ft 1 in *(30·20 m)*	28 ft 5 in *(8·66 m)*	Three 4 380 shp General Electric T64-GE-415 turboshaft engines	Payload 30 000-32 000 lb *(13 607-14 515 kg)*	
72 ft 3 in *(22·02 m)*			Two 4 380 shp General Electric T64-GE-415 turboshaft engines	Two machine guns	
44 ft *(13·41 m)*	53 ft *(16·15 m)*	12 ft 7·25 in *(3·84 m)*	One Lycoming T53-L-11 turboshaft engine	Machine guns, rockets, 8 passengers or 4 000 lb cargo	Total includes UH-1D/H/L and twin-engined UH-1N

Country/ Manufacturer	Strength	Role	Class (See note)	Country of Origin	Max Speed	Service Ceiling	Range	Max Endurance	T/O Weight
USA									
British Aerospace									
AV-8A Harrier	60	F/W V/STOL Strike/Recce	A	UK					
Grumman									
EA-6A/B Prowler	104	F/W ECM/Elint	A	USA	566 knots at S/L	44 500 ft *(13 565 m)*	955 n. miles with max load		65 000 lb *(29 483 kg)*
Lockheed									
C-130 Hercules	75	F/W Transport and Recce and Tanker	C	USA	335 knots	33 000 ft *(10 060 m)*	4 000 n. miles		155 000 lb *(70 310 kg)*
Lockheed									
SP-2H Neptune		F/W Long Range Maritime Patrol	C	USA	at 10 000 ft *(3 050 m)* 350 knots	22 000 ft *(6 700 m)*	3 200 n. miles		79 895 lb *(36 240 kg)*
Lockheed									
P-3A/B/C and EP-3E Orion	400	F/W A/S Recce	C	USA	at 15 000 ft *(4 570 m)* 411 knots	28 300 ft *(8 625 m)*	Mission radius 2 070 n. miles		142 000 lb *(64 410 kg)*
Gulfstream American									
Gulfstream III		F/W Maritime Patrol	C	USA	at height 561 knots	45 000 ft *(13 720 m)*	4 205 n. miles		68 200 lb *(30 935 kg)*
Beechcraft									
Maritime Patrol 200T		F/W Maritime Patrol and Multi-mission	C	USA	265 knots (max cruising)		1 790 n. miles	6 hr 36 min	14 000 lb *(6 350 kg)*
URUGUAY									
Sikorsky									
SH-34J	2	A/S and Search and Rescue Helicopter	B	USA					
Grumman									
Tracker (S-2A)	3	F/W A/S Patrol	C	USA					
Beechcraft									
Maritime Patrol 200T	1	F/W Maritime Patrol	C	USA					
VENEZUELA									
Agusta-Bell									
212ASW	10	A/S Helicopter	B	Italy					
Grumman									
Tracker (S-2E)	6	F/W A/S Patrol	C	USA					
Grumman									
Albatross (HU-16B)	4	F/W Search and Rescue Amphibian	C	USA					
YUGOSLAVIA									
Kamov									
Ka-25 ("Hormone")		A/S Helicopter	B	USSR					
Mil									
Mi-8 ("Hip")		Coastal Patrol Helicopter	B	USSR					
Canadair									
CL-215	4	F/W Search and Rescue Amphibian	C	Canada					

ANTI-SUBMARINE WARFARE WEAPONS

Country/ Designation	Type	Description	Ordnance Weight (kg)	Ordnance Calibre (cm)	Range (m)	Notes
AUSTRALIA						
Ikara	Rocket-assisted torpedo launcher	Single launcher, servicing rocket/torpedo magazine	Mk 44 and Mk 46 ASW torpedoes, rocket-assisted			IOC 1966. See Missiles' table
FRANCE						
Mod 1964 & Mod 1973	Rocket launcher	6-tubed, trainable	100	37·5	1 600	IOC 1964 and 1973, the earlier model is manually loaded, Mod 1973 is automatic
Bitubo	Rocket launcher	2-tubed, trainable, automatic loading	100	37·5	3 600	IOC 1970s
Mortier	Mortar	4-barrel, automatic loading	227	30·5	2 700	IOC 1959
Malafon	Rocket-assisted torpedo launcher	Single launcher servicing a rocket/torpedo magazine	L4 ASW torpedo			IOC 1962. See Missiles' table
ITALY						
Lancia Bas (LBK 113)	Mortar	3-barrel, automatic loading	160	30·5	1 000	IOC 1956
Menon	Mortar	Single barrel, trainable, automatic loading		30·5	1 000	IOC 1960
NORWAY						
Terne (Mk 8)	Rocket launcher	6-tubed, trainable, automatic loading	120	20	3 000	IOC 1961
SWEDEN						
—	Rocket launcher	4-tubed, trainable, automatic loading	Varies	37·5	3 600 (max)	IOC 1957, a variety of ordnance available —M 50 (250 kg, 830m), Erika (250 kg, 1 600m), Nelli (220 kg, 3 600m)
UNION OF SOVIET SOCIALIST REPUBLICS						
RBU 1200	Rocket launcher	5-tube	34 warhead	25	1 200	IOC 1958
RBU 2500	Rocket launcher	16-tube	21 warhead	25	2 500	IOC 1957
RBU 6000	Rocket launcher	12-tube automatic loading	21 warhead	25	6 000	IOC 1962
RBU 600	Rocket launcher	12-tube	55 warhead	30	600	IOC 1960
RBU 1000	Rocket launcher	6-tube	55 warhead	30	600	IOC 1962
—	Rocket-assisted torpedo launcher	2 or 4 cells, elevatable	SS-N-14 ASW torpedoes rocket-assisted			IOC 1970, SS-N-14 also reported to have a surface-to-surface capability

Wing span / Rotor diameter	*Length*	*Height*	*Power Plant*	*Armament Capacity*	*Remarks*
53 ft *(16·15 m)*	59 ft 10 in *(18·24 m)*	16 ft 3 in *(4·95 m)*	Two Pratt & Whitney J52-P-408 turbojets	Normally unarmed. ECM equipment	Data for EA-6B
132 ft 7 in *(40·41 m)*	97 ft 9 in *(29·78 m)*	38 ft 3 in *(11·66 m)*	Four 4 508 ehp Allison T56-A-15 turboprops	Cargo up to 26 640 lb *(12 080 kg)*. 92 troops, 64 paras or 74 stretchers	Data for late-model transport
103 ft 10 in *(31·65 m)* inc. tip tanks	91 ft 8 in *(27·94 m)*	29 ft 4 in *(8·94 m)*	Two 3 500 hp Wright R-3350-32W radial piston + two Westinghouse J34 turbojets	8 000 lb *(3 630 kg)* bombs, torpedoes, depth charges and rockets	
99 ft 8 in *(30·37 m)*	116 ft 10 in *(35·61 m)*	33 ft 8·5 in *(10·29 m)*	Four 4 910 ehp Allison T56-A-14 turboprops	Mines, depth bombs, torpedoes	Data for P-3C. Improved CP-140 Aurora being delivered to Canada
77 ft 10 in *(23·72 m)*	83 ft 1 in *(25·32 m)*	24 ft 4·5 in *(7·43 m)*	Two Rolls-Royce Spey Mk 511-8 turbofans	Unarmed. Equipment includes sea surveillance radar	Ordered for Royal Danish Air Force. Not used by US Navy
56 ft 7 in *(17·25 m)*	43 ft 9 in *(13·34 m)*	15 ft *(4·57 m)*	Two 850 shp Pratt & Whitney (Canada) PT6A-41 turboprops	Underbelly search radar	Operated by Uruguayan Navy and Japan Maritime Safety Agency. Not used by US Navy

ANTI-SUBMARINE WARFARE WEAPONS

Country/ Designation	*Type*	*Description*	*Ordnance Weight (kg)*	*Calibre (cm)*	*Range (m)*	*Notes*
USSR						
SUW-N-1	Rocket-assisted torpedo launcher	Twin launcher, servicing rocket/ torpedo magazine, trainable	ASW torpedoes, rocket-assisted			IOC 1967
—	Rocket-assisted torpedo launcher	—	SS-N-15 ASW torpedoes, rocket-assisted			IOC 1972, used in submarines
UNITED KINGDOM						
Squid (Mk 4)	Mortar	3-tubed mortar, manually loaded	200	30·5	350	IOC 1948, obsolete
Limbo (Mk 10)	Mortar	3-tubed mortar, mounted in a well on stern, automatically loaded	200	30·5	2 000	IOC 1951
UNITED STATES OF AMERICA						
Depth charge racks rails	Free fall	Gravity racks mounted on stern, magazine capacity varies due to different lengths	150	30·5	nil	IOC 1917, obsolete?, recently mounted in Brazilian "Niteroi" class
Y gun (Mk 1)	Projector	Projects 2 depth charges one to either side, mounted on stern, manually loaded	150	30·5	160	IOC 1919, obsolete
K gun (Mk 6)	Projector	Projects a single depth charge, manually loaded	150	30·5	160	IOC 1941, obsolete
Mousetrap (Mk 20 & Mk 22)	Rocket launcher	Launch stand, servicing 4 or 8 rockets, manually loaded	50	28·3	100	IOC 1942, adaptable to very small combatants, Mk 20—4 rockets, Mk 22—8 rockets per launcher, obsolete
Hedgehog (Mk 10 & Mk 15)	Rocket launcher	Launch mechanism, serving 24 rockets, manually loaded	26	12·7	350	IOC 1943, Mk 10 fixed—Mk 15 trainable, obsolescent
Weapon Alfa (Mk 108)	Rocket launcher	Single-tubed launcher, mounted in a trainable deck housing, automatically loaded	—	32	—	IOC 1950s, not widely employed, not in any active units, obsolete
Poor Boy (Mk 4)	Torpedo thrower	Side launching throwing device, manually loaded	Mk 32 ASW torpedoes			IOC 1950s, a few systems survive, obsolete
Mk 32	Torpedo tubes	Triple torpedo tubes, trainable	Mk 44 and Mk 46 ASW torpedoes			IOC 1960s, used widely throughout many non-Communist navies
Asroc (Mk 16)	Rocket-assisted torpedo launcher	8-cell, trainable launcher	Mk 44 and Mk 46 ASW torpedoes rocket-assisted			IOC 1960s, used in several non-Communist navies
Subroc	Rocket-assisted torpedo launcher	—	Mk 44 and Mk 46 ASW torpedoes rocket-assisted			IOC 1960s, used on board submarines

ELECTRONIC WARFARE

Country/ Designation	Purpose	Manufacturer	Description	Capabilities	Notes
FRANCE					
Dagaie	ECM	CSEE	Omni-directional radar receiver/decoy system	H-J bands	Best suited to minor combatants, in some frigates
DR 2000S	ESM	Thomson-CSF	Omni-directional radar receiver	F band	Used in surface ships with 27 kg antenna
DR 2000U	ESM	Thomson-CSF	Omni-directional radar receiver	F band	Used in submarines with 34 kg antenna or 14 kg periscope antenna
DR 3012	ESM	Thomson-CSF	Components: broadband omni-directional radar receiver (DR 3012); analysis (ARIAL 15, DALIA 500 or DALIA 1000)	—	Used in both surface craft and submarines (DR 3012L)
TMV 026	ESM	Thomson-CSF	Omni-directional radar receiver	E-G bands	Used in minor combatants, also deployable in aircraft
TMV 430	ECM	Thomson-CSF	Components: broadband receiver (DR 2000); warning, analysis and identification unit (DALIA 500 or DR 3012 ARIAL); noise and deception jammer (ALLIGATOR 5)	—	Principally for minor combatants also found in frigates and submarines
GERMANY, FEDERAL REPUBLIC					
Schalme 1	ECM	AEG-Telefunken	Omni-directional radar receiver/decoy system	—	Designed for minor combatants
ITALY					
Gamma	ECM	Elettronica	Components: broad-band receiver (ELT 116); warning, analysis and identification (?); jammer (ELT 311)	2-18 GHz	
INS-1	ECM	Selenia	Components: broadbeam receiver (RQN-1); warning and analysis (PAW-1); identification (RIN-1); jammer (TQN-1)	Poss 1-18 GHz	Jammer (TQN-1) is optional; without it INS-1 is ESM; suited for minor combatants
INS-3	ECM	Selenia	Components: broadbeam receiver (RQN-3); remaining components probably same as INS-1	1-18 GHz	Suited for frigate size warship
MM/SPR-4	ESM	Elettronica	—	1-10·5 GHz	In use by Italian Navy
Nettuno	ECM	Elettronica	—	—	In *Sparviero*
Newton	ECM	Elettronica	—	—	—
SWEDEN					
EWS 900CA	ECM	Saab	—	—	In *Hugin* class; suited for minor combatants
Matilde	ESM	Philips	—	—	—
UNION OF SOVIET SOCIALIST REPUBLICS					
Bell Clout	ECM	—	—	—	IOC 1960s, in *Kresta* class
Bell Tap	ECM	—	—	—	In *Kara* class
Fig Jar	ECM	—	—	—	IOC 1960s, in *Petya, Mirka* and *Poti* classes

GUNS

Calibre mm (inch)	Length in Calibres	Country and Year Introduced	No. of Barrels Mk. of Mtg.	Elevation Degrees	Rate of Fire per Barrel (Rounds per Minute)	Weight of Shell kg (Explosive Charge)	Range km (Surface/Height)	Range km AA Slant	Associated Radar/Director
HEAVY									
406 (16)	50	US Navy, 1936	Triple	45	2	1 225 AP 862 HC	39		Mk 34 Fire control director
203 (8)	55	US Navy, 1971	Single Mk 71	—5, +65, 20/sec	10-12 rpm	118 max	Estimated over 55		Mk 68 FCS
203 (8)	55	US Navy, 1927, 1944	3 Mk 16	41	10 cased	125	28		Mk 34 fire control director with Mk 13 radar
152 (6)	53	Bofors, Sweden 1942	Triple and twin	70 60	10-15	46	18/10 26 max		
152 (6)	50	Vickers, UK 1951	Twin Mk 26	80	20	59	23		MRS-3 FCS
152 (6)	50	Vickers, UK, 1934	Triple Mk 23	45	8	50	23 max		
152 (6)	47	US Navy, 1933	Triple Mk 16		10	47	23 max		Mk 33 FCS Mk 34 Director
150 (5·9)	50	USSR, 1938	Triple Semi-auto	50	4/10	50	27 max		26 ft range finder (built-in)
MEDIUM									
133 (5·25)	50	UK, (1939)	Twin Mk 1	70	12	36	21	13 ceiling	
130 (5·1)	60	USSR, 1953	Twin Auto	70	15	27	17/8 28/13 max		
130 (5·1)	50	USSR, 1936	Twin semi-auto single	40	10	27	24 max 15 opt		
130 (5·1)	58	USSR	Twin semi-auto Dual purpose	50	15	27	28 max 18 opt	13 max	Sun Visor, Egg Cup and Wasp Head

ELECTRONIC WARFARE

Country/ Designation	*Purpose*	*Manufacturer*	*Description*	*Capabilities*	*Notes*
USSR					
Side Globe	ECM	—	—	—	IOC 1966 in *Moskva, Kresta* and *Kara* classes
Stop Light	ECM	—	—	—	In submarines
Tee Plinth	ECM?	—	—	—	—
Tilpot	ECM?	—	—	—	—
Watch Dog	ECM	—	—	—	IOC late 1950s
UNITED KINGDOM					
Abbey Hill	ESM	MEL	—	Prob 1-18 GHz	In *Broadsword* class and some Type 21 frigates
Cutlass	ECM	Decca-Racal	—	1-18 GHz	Suited to ships from minor combatants to frigates
RCM 2	ECM	Decca-Racal	—	5-9 GHz 9-16 GHz	—
RDL	ESM	Decca-Racal	—	1-18 GHz	Design work began 1968 for export; operational in 30 navies
Sarie	ESM	EMI	—	—	—
Susie	ESM	MEL	—	2-18 GHz	Suited to ships from minor combatants to frigates; antenna weights range from 154 kg to 300 kg
UNITED STATES OF AMERICA					
SLQ 17	ECM	Hughes	—	—	Deceptive jammer system
SLQ 21	ESM	American Electronic Laboratories	—	—	In *Spruance* class
SLQ 32 (V1)	ESM	Raytheon	—	—	Modular system that can be upgraded to V2 or V3
SLQ 32 (V2)	ESM	Raytheon	—	—	Modular system that can be upgraded to a V3
SLQ 32 (V3)	ECM	Raytheon	Components: Chaff system (Hycor RBOC)	—	Suited to major combatants
SLR 600	ECM	General Instrument Corp	—	E-J bands	Suited to minor combatants
SLR 610	ECM	General Instrument Corp	—	C-J bands	—
SLR 640	ESM	General Instrument Corp	—	—	Suited to ships up to destroyer size
WLQ 4	ESM	GTE-Sylvania	—	—	In *Sturgeon* class submarines
WLR 8	ESM	GTE-Sylvania	—	Poss 50 MHz-18 GHz	In *Ohio* and *Los Angeles* class submarines plus some carriers

Remarks

US Navy Reserve Battleships of "Iowa" class.

MCLWG (Major Calibre Lightweight Gun) at present only in destroyer *Hull* for trials. Originally destined for "Spruance" class—production discontinued. Intended for surface fire. Digital Mk 86 GFCS was intended in new constructions.

Automatically operated in US cruisers of "Salem" class.

Fitted in cruisers *Aguirre* and *A. Grau* (Peru) and *A. Latorre* (Chile). *A. Latorre* has the only existing triple mount.

Only on board cruisers HMS *Blake* and *Tiger* (now in reserve). One mounting per ship.

Now only found in British-built cruisers—Indian *Mysore* and Peruvian "Bolognesi" class. Mk 23 gun on Mk 23 mounting.

Only aboard US cruiser "Brooklyn" class owned by Argentina (2) and Chile (2).

Independent-elevating barrels often referred as L.57 long. In "Sverdlov" classes of Soviet cruisers.

Dual purpose mounting exists only aboard British-built cruiser *Babur* (Pakistan).

"Kotlin" class and variants (USSR and Polish "Warszawa"). Sometimes referred to as 58 calibres long × 50.

"Skory" class destroyers (USSR). "Luda" class Chinese Navy. Single only in ex-Soviet "Gordy" class of Chinese Navy.

"Skory" (Mod) and "Kotlin" classes.

Calibre mm (inch)	Length in Calibres	Country and Year Introduced	No. of Barrels Mk. of Mtg.	Elevation Degrees	Rate of Fire per Barrel (Rounds per Minute)	Weight of Shell kg (Explosive Charge)	Range km (Surface/Height)	Range km AA Slant	Associated Radar/Director
MEDIUM									
127 (5)	54	US Navy, 1969	Single Mk 45	+65– –15	20	32			Mk 86 FC 3 with AN/SPG-60 radar
127 (5)	54	OTO Melara, 1968	Single	85	45	32	15/7		
127 (5)	54	US Navy, 1953	Single Mk 42	+85– –15	40 or 34	46	24/14 max		Mk 68 Director with AN/SPG-53 radar
127 (5)	54	US Navy, 1944	Single Mk 39	80	15	— 32	12/8 22/13 max		Mk 57
127 (5)	38	US Navy, 1935	Single Mk 30 Twin Mk 38 and others	80	15	37	13/8 17/11		
127 (5)	25	US Navy, 1923	Single Mk 27		8	27			
120 (4·7)	50	Bofors, Sweden, 1950	Twin Auto	85	42	24	13/7 20/12 max		Dutch fire control M 20
120 (4·7)	45	Vickers, UK, 1931	Single	40	12	23	18		
120 (4·7)	50	Ansaldo, Italy, 1926	Twin			23			
120 (4·7)	46	Bofors, Sweden, 1967	Single	80	80 or 51	21 (3·2)	12/8 19/12		
120 (4·7)	45	Bofors, Sweden, 1945	Twin	80	20	24	19/13		
114 (4·5)	55	Vickers, UK, 1971	Single Mk 8	+55– –10	25	21	22		
114 (4·5)	50	Vickers, UK, 1946	Twin Mk 6	80	11-25	25	13/6 19		
114 (4·5)	45	Vickers, UK, 1942	Twin Mk 4	80	15	25	18		"Battle" class
114 (4·5)	45	Vickers, UK, 1943	Single Mk 5	55		25	17		"Tribal" class
102 (4)	60	Vickers, UK, 1955	Single Mk(N)R	75	40	16	12/8 18/12		
102 (4)	45	Vickers, UK, 1935	Twin Mk 19	80	up to 16	16	19/13		
102 (4)	40	Vickers, UK, 1940	Single Mk 23	60	15	16	9		
100		USSR 1970	Single auto						Owl Screech
100 (3·9)	60	USSR, 1942	Twin	80 or 90	15-20	16	11/8 18/12 max		Sun Visor
100 (3·9)	56	China							
100 (3·9)	55	France 1959	Single, various versions	80	60	13·5	13/7 17/11 max		DRBC 32
100 (3·9)	50	USSR	Twin	80	15	16	20 12	15 000 max 9,000 Slant	Sun Visor
100 (3·9)	50	USSR, 1947	Single	40 or 80	15	13·5	18/11 16/6	6,000	Sun Visor
85 (3·4)	55	USSR, 1943	Single, Twin	70 or 75	10-20	9·5	9/6 14/9	6,000	
76 (3)	70	Vickers, UK, 1951	Twin Mk 6	80 or 90	90	7	17		
76 (3)	62	OTO Melara, Italy, 1964	Single	85	85	6	8/5 16/12 max		
76 (3)	62	OTO Melara, Italy, 1961	Single	85	60	6	8/5 16/12 max		
76 (3)	60	USSR, 1961	Twin	85	60	6	15/10		
76 (3)	50	Bofors, Sweden, 1965	Single	30	30	5·9 (0·6)	7·5/— 13/— max	6 000	
76 (3)	50	US Navy, 1944	See Remarks	85	45 or 50	6	7/5·5 13/8		
76 (3)	50	US Navy, 1936	Single Mks 21-22 & 26	85	20 or 33	6	12/9		Mk 52

Remarks
Ordered by US Navy ("Virginia", "California", "Spruance" and "Tarawa" classes), Mk 65 improvement, proposed for late "Spruance" class.
In use by Canada (four "Iroquois" class destroyers) and Italy (two "Audace" class) ordered for "Lupo" class frigates of Italy, Peru and Venezuela. Probably for Italian "Maestrale" class.
Aboard US carriers, cruisers, destroyers and frigates of post war design. Also in Australia, West Germany, Japan and Spain.
Aboard Japanese "Akizuki" and "Murasame" classes. Semi-automatic.
Twin Mk 38 aboard US-built destroyers "Gearing" and "Sumner" classes in many navies; Danish, Italian and Spanish built escorts. Single Mk 30 in other wartime escorts; US built in many foreign navies. Cruisers, "Long Beach", "Brooke" and "Garcia" classes of frigates, auxiliaries, and a few Spanish and Yugoslav built frigates. Both models employ Mk 12 barrel and usually Mk 37 fire control director, sometimes complemented for Mk 56. In austere installations Mk 52 fire control system, including Mk 51 manual director. Other variants of this widely used wartime gun are Mk 32 in several old US cruisers. Single Mk 24 in "Albany" class cruisers also "Hancock"/"Essex" classes of carriers. Open mountings without shield are used in auxiliaries and known as either Mk 37 or Mk 30 Mod 24, both singles.
Single open mountings used (eight per ship) in US built "Brooklyn" class cruisers remaining in Argentine Navy (2) and Chilean Navy (1).
Dutch fire control director M 20 series aboard destroyers of the "Halland" class (Sweden 2, Columbia 2) and of the Dutch "Tromp" and "Friesland" classes.
Manually operated. Surface fire only in destroyer *Ranjit* of the Indian Navy. Mk 9 gun on Mk CP-18 mounting.
Believed to be used in the two "Paraguay" class gunboats of Paraguayan Navy.
Mounted in the two Finnish "Turunmaa" class escorts and Indonesian frigates. Automatic. 52 rounds in ready-use magazine.
Swedish destroyers of "Öland" and "Östergotland" classes. Semi-automatic light shield. Originally employing Mk 45 fire control.
Developed from the "Abbot" field gun. Aboard British "Amazon", "Bristol" and "Sheffield" classes, Brazilian "Niteroi", Argentinian "Sheffield", Iranian "Saam" classes and Thailand Vosper.
Semi-automatic aboard escorts of Australia (where it was locally built under licence) Brazil, Chile, India, Iran, Netherlands, New Zealand, Peru, South Africa and UK navies.
It is assumed that closed twin turrets in "Battle" class destroyers of Iran and Pakistan navies and Venezuelan "Aragua" class use the same gun but are semi-automatic.
Fitted to Pakistan "C" class and Malaysian frigate *Rahmat*; open turret hand loaded.
Used exclusively aboard two "Almirante Williams" class destroyers of Chilean Navy. Closed turrets. Four mountings per ship.
These performance figures belong to the pre-war 2·1 ton 4 in barrel made by Vickers. The twin Mk 19 can be found in the navies of Ecuador, Egypt, India, Malaysia, Nigeria, Pakistan, Peru and South Africa. Fitted in ex-British frigates of Burma, Dominican Republic, Egypt and India.
A short barrelled ex-submarine type mounting, serves in "Vosper Mk 1" class corvettes owned by Libya and Ghana.
"Krivak II" only.
Only in Soviet cruisers ("Sverdlov" class) and "Kotlin" class destroyers. The gunnery of the Chinese "Jiangdong" class could be considered as a local development. Each turret uses its own Egg Cup radar. Fire control is managed with Sun Visor radars.
Known to exist in Chinese "Jiangnan" class. Probably the same as those aboard North Korean frigates of "Najin" class and corvettes of the "Sariwan" and "Tral" classes, the last being Soviet built. The guns are thought to be a Chinese refit of a Soviet weapon, possibly the 100/50 1947 model.
Two versions: *Modèle 1953* with analogue fire control and *Modèle 68* associated with digital fire control. Integrating DRBC 32 radar. Aboard two ("Clémenceau") carriers, one "Colbert" cruiser, two "Suffren" frigates, *Jeanne d'Arc* and escorts of the "C 65", "C 70", "A 69", "F 67", "ASW", "T 53 ASW", "T 56" and "Commandant Rivière" classes. Total of 36 ships including those under construction in French Navy. Also fitted in Belgian "E 71" class (4); Federal Germany ("Hamburg", "Koln" and "Rhein" classes) and *Deutschland*, Portugal ("C. João Belo" and "João Countinho" classes); Argentina; (A69 class new Avisos); and Turkish ("Rhein") class. The newest 1976 turret, which is lighter than its predecessors is claimed to reach 90 rounds per minute.
"Sverdlov" class.
"Riga", "Kola", "Don" and "Purga" class ships of Soviet Navy. Semi-automatic.
Twin mounts in "Skory" class. Single mounts in "Kronshtadt" class. New enclosed mounting, single, on "Krivak" class ships built since 1976.
Fully automatic aboard Canadian frigates and HMS *Blake*.
Ordered by Argentina, Denmark, Ecuador, Federal Germany, Ghana, Greece, Iran, Israel, Italy, Libya, Morocco, Netherlands, Nigeria, Oman, Peru, Spain, Thailand, Turkey, Venezuela and the USA. The USA has standardised the weapon as the Mk 75 to start its employment in "Pegasus" and "WMEC-630" classes; a variety of fire control systems is used, notably the Dutch M 20 series.
Aboard Italian naval "V. Veneto," "A. Doria", "Impavido", "Alpino," "Bergamini", "Centauro" and "De Cristofaro" classes. Sometimes referred to as Brescia model or MMI or MMK.
"Kiev", "Kara", "Kynda", "Krivak", "Kashin", converted "Kildin", "Mirka" and "Petya" classes.
Surface fire only. Used aboard fast attack craft of Norwegian "Storm" class and Singapore "Type B" Vosper class (3).
Most usual versions are single Mk 34 single mount (weight 7·7 tons). Mk 27 and Mk 33 twin mounts (weight 14·5 tons). In both open and semi-protected versions, the last using a fibre-glass shield. Aboard US-built cruisers, destroyers, frigates and auxiliaries. Extensively used in foreign navies and foreign-built ships; notably Japan. Built under licence (Mk 34) in Spain. Mk 56 and Mk 63 gunfire control systems usually employed.
Semi-automatic; intended for surface fire only; widely used in many obsolete ships of US Navy (auxiliary, amphibious) and abroad including wartime-built escort destroyers. Also Greek "Algerine" class. Many other 76 mm of obsolete types remain in service in small quantities. A single 76/40, probably OTO Melara-built, is used aboard Italian built corvettes ("Albatros" class) owned by Denmark (2) and Indonesia. Also a 76/40, probably Vickers' 1914 model is used by the Paraguayan Navy on its "Humaita" and "C. Cabral" classes. These have single mounts. Another 76 mm tank turret 76/41·2 is used by Soviet river patrol craft of "Shmel" class. "Bangrachan" class of Thai Navy probably use Japanese wartime guns of 76 or 75 mm by 40 or 50 calibres long.

Calibre mm (inch)	Length in Calibres	Country and Year Introduced	No. of Barrels Mk. of Mtg.	Elevation Degrees	Rate of Fire per Barrel (Rounds per Minute)	Weight of Shell kg (Explosive Charge)	Range km (Surface/Height)	Range km AA Slant	Associated Radar/Director
LIGHT									
57 (2·2)	80	USSR, about 1965	Twin	85	120	2·7	5/1 12/5 max		Muff Cobb
57 (2·2)	70	USSR, 1959	Single, Twin, Quad	85	120	2·8	—/4 9/6 max	6 000	Hawk Screech
57 (2·2)	70	Bofors, Sweden, 1971	Single	75	200	2·4 (0·4)	14/—		Dutch M-20 series
57 (2·2)	60	Bofors, Sweden, 1950	Twin/Single	90	120-130	2·6	—/5 14/9		
45 (1·8)	85	USSR, 1953	Quad	90	160-220	1·5	—/4 9/6 max	7 000	Hawk Screech
40 (1·6)	70	Bofors, Sweden, 1946	Single 2·4·3·3 Also Twin	80-90	240-300	2·4	4/— 13/9		
40 (1·6)	60	Bofors, Sweden, 1942	Various	80	120-160	0·89	—12·7 10/4·5 max		
37 (1·5)	80	Krupp, Germany, 1932	Single	85	80	0·745	4/3		
37 (1·5)	63	USSR, 1944	Twin	80	130	0·7	8·5 max	3 000	Eye Shooting
37 (1·5)	63	USSR, 1944	Single	80	130	0·7	8·5 max	3 000	Eye Shooting
35 (1·5)	90	Oerlikon, Switzerland, 1972	Twin	85	550	1·55	6·5 max		
30 (1·2)	75	Oerlikon, Switzerland, 1974	Twin	80-85	650	1 0·36	3 10·2 max		
30 (1·2)	70	Hispano Suiza, France, 1962	Single	83	600	0·42	2·8 8·5 max		
30 (1·2)	65	USSR, 1960	Twin	80 or 85	500		2·5 4 max		Drum Tilt
20 (0·8)	70	Oerlikon, Switzerland, 1938	Twin	85	465	0·12	5	1 000	
20 (0·8)	70	Oerlikon, Switzerland, 1980	Single	85	800	0·24			

MISSILES

Further details can be found in the current edition of JANE'S WEAPON SYSTEMS

Note: Maximum range given can be up to twice the optimum range.

Country/ Manufacturer	Classification	Name	No.	Length ft	Launch weight lb	Power plant	Guidance	Max range n. miles	Mach speed	Warhead	Remarks
AUSTRALIA											
Dept of Productivity	A-S	Ikara	—	11·3		Solid fuel rocket 2 stage	Command link	13	—	Torpedo-HE	Acoustic homing torpedo. Digital control system in RAN. In RN version computer service from ADAS. Branik system in Brazilian "Niteroi" class linked to ships WCS with two Ferranti FM1600B computers.
FRANCE											
Aerospatiale	SLBM	MSBS	M1	34·1	39 683	Solid fuel rocket 2 stage	Inertial	1 350	—	Nuclear 500 KT	In "Le Redoubtable" class SSBN.
	SLBM	MSBS	M2	34·1	44 000	as above	Inertial	1 860	—	Nuclear 500 KT	In production to replace M1.
	SLBM	MSBS	M20	34·1	44 000	as above	Inertial	1 860	—	Thermonuclear 1 MT	First embarked mid-1976.
	SLBM	MSBS	M4	34·1	73 300	as above with 3 stages	Inertial	2 500+	—	Thermonuclear with seven MRV each of 150 KT	Production by late 1970s.
CNIM	SSM	—	RP14	6·5	118	Solid fuel rocket	Nil	9	—	HE	22 rocket multiple launcher.
Matra (with Oto Melara)	SSM	Otomat	—	15·8	1 540	Turbojet	Inertial cruise Active radar homer	112	0·9	132 lb HE	Sea-skimmer for last 2 miles; can be ASM. Used by Egypt, Italy, Libya, Nigeria, Peru, Philippines and Venezuela. Mid-course guidance can be provided by AB 212 and SH3D helicopters.
	SSM	Brieaero	—	—	—	—	—	215	1+	—	New version of Otomat for service in 1980.
Aerospatiale	SSM	Exocet	MM38	17·1	1 617	2 stage solid fuel rocket	Inertial cruise Active radar homer	26	0·9	363 lb HE	Sea-skimmer throughout flight. Variants — AM 39, air-launched (range 38 nm); MM 39, ship-launched version of AM 39; MM 40, improved MM 38 with 40 n. mile range; SM 39, projected submarine launched MM 39.
	SSM	—	SS11	3·9	66	2 stage solid fuel rocket	Wire-guided	2	330 knots	HE or torpedo	Same characteristics as AS-11. Harpon is very similar with improved guidance.
	SSM	—	SS12	6·2	165	2 stage solid fuel rocket	Wire-guided	4·4	—	66 lb HE	Same characteristics as AS-12.

Country/ Manufacturer	Classification	Name	No.	Length ft	Launch weight lb	Power plant	Guidance	Max range n. miles	Mach speed	Warhead	Remarks
											Remarks
FRANCE											
Ecan Ruelle	SAM	Masurca	Mk 2	28·2 (with booster)	4 070	2 stage solid fuel rocket	Mod 2 Beam rider. Mod 3 semi active homer	25 (slant)	2·5	105 lb HE	Mounted in *Colbert, Suffren* and *Duquesne.*
	SAM	Hirondelle Super 530	—	—	—	—	—	—	—	—	Project for PDMS for small ships and craft.
	SAM	Catulle	—	—	—	—	—	—	—	—	Development. Multi-barrelled rocket system firing salvoes of 40 mm shells.
Matra	SAM	Crotale Navale	R440	9·5	185	Solid fuel rocket	Infra-red/ command	10 (slant)	0·9 to 1·2	33 lb HE	Being installed in French Navy and Saudi frigates
Matra-Hawker Siddeley	ASM	Martel	AS37/ AJ168	13·8 12·8	1 165	Solid fuel rocket	TV on AJ168; passive radar homing on AS37	30	2 to 0·8	HE	Air-to-surface weapon also in service with RAF.
Aerospatiale	ASM	—	AS20	8·5	315	2 stage solid fuel rocket	Radio command	4	—	66 lb HE	In service.
	ASM	—	AS30	12·7	1 146	2 stage solid fuel rocket	Radio command or laser	6	1·5	506 lb HE	In service.
Matra	AAM	Magic	R550	9·2	200	Solid fuel rocket	Infra-red	4	—	HE	In service 1975.
	AAM	—	R530	10·8 11·6 (Super)	430	Solid fuel rocket	Infra-red or semi-active radar. EMD electro-magnetic, semi-active in Super 530	9·5	2·7	HE	Proximity fused head. Being replaced by Super 530.
Latecoere	A/S	Malafon Mk 2	MQ1	18·7	3 250	2 stage solid fuel rocket and booster	Radio/acoustic homing	8·1	450 knots	Torpedo	Torpedo dropped by parachute 300 yards from target.
GERMANY (FEDERAL REPUBLIC)											
Messerschmitt-Bölkow-Blöhm	ASW	Kormoran	—	14·4	1 323	3 stage solid fuel rocket	Active radar	21	0·95	350 lb HE	Suitable for all fixed and rotary-wing aircraft.
ISRAEL											
Israel Aircraft Industries	SSM	Gabriel 1, 2 and 3	—	11·0/11·2/ 12·5	950 (1) 1 150 (2) 1 230 (3)	2 stage solid fuel rocket	Active radar or optical. Semi-active head (1 and 2), active (3)	11 (1) 18 (2) 20 (3)	0·7	400 lb HE	Mounted in various "Saar" classes. Now being exported, eg Singapore, South Africa.

Soviet Navy "Moskva", "Kresta I" and "Kresta II", "Grisha I, II and III", "Nanuchka", "Poti", "Turya" and "T.58" classes. Amphibious and auxiliary ships sometimes referred to as 73 calibres long. Water-cooled.

Only twin modified has muzzle brake. This and quadruple are aboard Soviet "Kildin", "Kanin" and "Kotlin" classes. Singles are aboard Soviet "Skory" (modified) destroyers and various classes of minesweepers also in East Germany's amphibious ships. A single Chinese 57 mm gun is used in "Shanghai II" class fast attack craft (including some transferred to Albania) and the new "Luda" class.

Plastic-enclosed turret used by navies of Indonesia (PSMM Mk 5); Malaysia *(Perdana)*; Norway (Coast Guard); Singapore ("Sea" class); Sweden (fast attack craft); Thailand's "Prabarapak" class.

Different single and twin barrel mountings. Aboard Peruvian "A. Grau" class and Chilean *A. Latorre* and used in Swedish Navy. Also in French cruiser *Colbert* and escorts of the T47, T53 and E52 classes.

In unconverted "Kildin" and "Kotlin" classes. Semi-automatic.

The original 1946 model has appeared in a very wide range of variations built in many Western countries. Usually 1958 versions: SP-48 type built in Spain, British Mk 7 and Italian Breda improvements. (106 twin and 107 single) with 32 ready use rounds per barrel; Twin type 64 (200 ready use rounds/barrel) and type 350P/564 single (144 ready use rounds). Latest improvement is Breda Compatto twin 40/70 using either 736 ready use rounds or 444 ready use rounds. Ordered for Italy, Peru and Venezuela ("Lupo" class) and Libya. This weapon uses "Dardo" system. Non-Italian models use 20 ready use rounds.

Many local versions have been manufactured from the original system. Most common are the US (twin Mk 1 and quad Mk 2 water-cooled mountings, single Mk 3 air-cooled.) Other variants are the British twin Mk 5 weighing 3 tons and a French single.

Single mounting built in Spain around 1950. Remaining example aboard Spanish tug *RR-29*. Semi-automatic.

"Sverdlov", "Skory (modified)" and "Riga" classes. Twin Chinese mountings in "Whangpu", "Shandong", "Shanghai" and "Shantou" classes.

"Kronshtadt" and "T301" classes. Minesweepers use new enclosed version turret called 70-K.

The original weapon (GDM-A) is only found in Ghana, and Greek fast attack craft, Iranian "Saam" class, Libyan *Dat Assawari*, Turkish "Doğan" class and Ecuadorean Lürssen craft. Also possibly in two Japanese "Improved Haruna" class. An Italian mounting variant (Oerlikon OTO) was proposed for Peruvian "Lupo" class and Libyan 550 ton corvettes. KDC barrel weighing 120 kg. Has 112 ready use rounds per barrel.

GMC-A muzzle braked barrel KCB, HEX, HS 8, 31SLH. Manufactured in the UK and in service in UAE patrol craft and Indonesian "Surapati" class frigates. American Emerlec Mk 74 twin mounting (950 ready use rounds) was first embarked in South Korean "Gireogi" coastal patrol craft. Now also used on Greek FPBs.

Mounting (215 ready use rounds) in French "Commandant Rivière" class. "Ouragan" class and single "La Combattante" fast attack craft. Hispano Suiza system is now owned by Oerlikon.

Water-cooled. Small enclosed turret used in Soviet ships of "Kanin" some "Kotlin" and "Sverdlov" (CC version) classes. Also some "Rigas", fast attack craft, minesweepers and amphibious craft. In the German Democratic Republic's "Hai" class and patrol ships is a 30 mm single mounting which was introduced in the new Polish (series 500) landing craft. This might belong to the same system.

Type HS 804 with muzzle velocity of 835 m/s. 60 round magazines with AP, HE or incendiary.

Country/ Manufacturer	Classification	Name	No.	Length ft	Launch weight lb	Power plant	Guidance	Max range n. mile	Mach speed	Warhead	Remarks
ITALY											
Sistel	SSM	Sea Killer I (Nettuno)	—	12·3	375	1 stage solid fuel rocket	Beam rider/ radio-command or optical	6+	1·9	77 lb HE	Operational for use in ships or helicopters (Marte). Five round launcher in ships. Sea Skimmer.
	SSM	Sea Killer II (Vulcano)	—	15·4	660	2 stage solid rocket motor	As above	13	0·8	155 lb HE	Sea Skimmer.
Otomat (with Matra)	SSM	Otomat (see "France")									
	ASM	Sea Killer Mk 2/Marte (Vulcano/Marte)	—	15·5	661	2 stage solid rocket motor	Radar or optical	11	0·8	155 lb HE	For use in helicopters. "Mariner" version for small ships. Sea Skimmer.
Sistel	SAM	Aspide	—	12·1	485	single stage rocket	Semi-active CW radar	10	—	—	Ship mounted.
NORWAY											
Kongsberg Vaapenfabrikk	SSM	Penguin 1 and 2	—	9·8	726	2 stage solid fuel rocket	Inertial/infra-red homing	14·5	0·7	264 lb HE	Fitted in frigates and fast attack craft.
	ASM	Penguin Mk 2 (Mod 3)	—	9·7	750	2 stage solid fuel rocket	as above	15	—	—	Fitted in frigates.
	A/S	Terne III	—	6·6	298	2 stage solid fuel rocket	Nil	1·5	—	110 lb HE depth charge	Full salvo of six can be fired in 5 seconds. Reload time 40 seconds.
SWEDEN											
Saab-Scania	SSM	—	RB08A	18·8	2 700	Marboré turbo-jet	Radar homing	110	0·85	HE	For ship and coast artillery use. Entered service 1967.
Saab-Bofors	SSM	—	RBS 15	14·3	580	Turbo-jet, 2 boosters	Active radar homing	Long range	—	HE	Contract for Swedish Navy—July 1979. Sea skimmer.
Bofors	A/S	—	Type 375	—	550	Rocket	Nil	0·5/1/ 2·2	—	HE	Have three different rocket motors M50 (0·5 m), Erika (1 m), Nelli (2·2 m).
UNION OF SOVIET SOCIALIST REPUBLICS											
	SLBM	—	SS-N-4	42·5	41 000 app.	2 stage solid fuel rocket	Inertial	370	—	Nuclear megaton	Tested 1955. Operational 1958. Obsolete. In "Golf I" class. Surface launched.
	SLBM	—	SS-N-5	42·5	41 000 app.	2 stage solid fuel rocket	Inertial	900	—	Nuclear 800 kt	Operational 1963. Dived launched. In "Golf II" and "Hotel II" classes.
	SLBM	—	SS-N-6	31·6	44 000	2 stage liquid fuel rocket	Inertial	1 300 (1 600 Mks II and III)	—	Nuclear megaton (3 MRV in Mk III)	Operational 1967. "Yankee" class. (Mks II and III in 1974-75).
	SLBM	—	SS-N-8	42·5	45 000	2 stage liquid fuel rocket	Stellar-Inertial	4 200	—	Nuclear megaton	Operational 1972, "Delta I" and "Delta II" classes.
	SLBM	—	SS-N-17	36·3	?	2 stage solid fuel rocket with Post Boost Vehicle (PBV)	Inertial	2 400	—	Nuclear MRV or MIRV	Deployed in one "Yankee" class from 1977 for test programme.
	SLBM	—	SS-N-18	46·3	44 000	2 stage liquid fuel rocket with Post Boost Vehicle (PBV)	Inertial	5 200	—	Nuclear MRV	Sea trials Nov 1976—deployed in "Delta III" class.
	SLBM	—	SS-NX-20	—	—	—	—	4 200	—	Nuclear MIRV	First reported 1980. To be carried in "Typhoon" class. Trials have not been successful in 1980-81.
	SLCM	—	SS-N-7	22	—	Solid fuel rocket	Autopilot-active radar homing	30+	0·9	Nuclear 200 kt or 1 100 lb HE	Operational 1969-70. Submarine launched from dived in "Charlie" classes.
	SLCM	—	SS-N-9	30	—	Single stage solid fuel	Active radar homing	60	0·9	HE or nuclear	Probably in "Papa" classes.
	SSM	Styx	SS-N-2A and B	21	5 100	2 stage with solid booster and probably liquid bi-propellant sustainer	Active radar or IR homing	25	0·9	900 lb HE	Altitude can be preset up to 300 m. SS-N-2A in service 1959 and 2B in 1965. 2A has fixed wings, 2B folding wings.
	SSM	—	SS-N-2C	21	5 100	as above	as above	45	0·9	1 000 lb HE	A much updated version of Styx which completes its run as a sea-skimmer. Altitude can be preset up to 300 m. Third party control required to utilise full range.
	SSM	Sepal	SS-N-3	36	9 900	2 solid boosters with liquid turbojet sustainer	Probably command mid-course guidance. Active radar terminal homing	250+	1·5	2 200 lbs HE or Nuclear 350 kt (800-strat.)	Operational 1960. Surface launch from submarines (3A). "Kynda" and "Kresta I" classes (3B). Strategic version 3C.
	SSM	Siren	SS-N-9	30	—	Single stage solid fuel	Active radar homing	60	0·9	1 100 lbs HE or Nuclear 200 kt	Operational 1968-69. In "Nanuchka" class.
	SSM	—	SS-N-12	—	—	—	Active radar homing	300	2·5	2 200 lbs HE or Nuclear 350 kt	Development of SS-N-3 for both s/ms and surface ships. Fitted in "Kiev" class. Operational 1973.

Country/ Manufacturer	Classification	Name	No.	Length ft	Launch weight lb	Power plant	Guidance	Max range n. mile	Mach speed	Warhead	Remarks
USSR											
	SSM	—	SS-N-19	—	—	—	—	250+	—	—	Fitted in "Kirov" and "Oscar" classes.
	SAM	Goa	SA-N-1	22 (booster)	—	2 stage solid fuel rocket	Radio command	17 (slant)	1+	HE	Operational 1961.
	SAM	Guideline	SA-N-2	34·7	5 000	Solid booster liquid sustainer	Radio command	25	1+	HE (290 lb)	Only in *Dzerzhinsky*. non-operational.
	SAM	Goblet	SA-N-3	20	1 200	2 stage solid fuel rocket	Radio command	20-30	1+	HE (90 lb)	Operational 1967.
	SAM	—	SA-N-4	10·5	—	—	Radio command	8	2?	HE	Probably PDMS. Operational after 1970.
	SAM	—	SA-N-5	4·75	32	Rocket	Manual aiming with IR homing	5·6	1·5?	HE	Seaborne form of SA-7 (Grail) in light and amphibious forces.
	SAM	—	SA-N-6	23	—	1 stage rocket	Homing	31+	6	?	Operational 1979. Anti-missile capability. Fitted in "Kirov" class. Probably based on SA-10.
	ASM	Kipper	AS-2	33	7 700	1 Turbojet	Active radar homing	115	1·4	2 200 lbs HE	Operational 1960. Used by Badger C aircraft.
	ASM	Kangaroo	AS-3	49·2	17 600	1 Turbojet	Non-homing	350	1·8	Nuclear 500 kt	Operational 1961. Used by Bear aircraft.
	ASM	Kitchen	AS-4	37	13 000 ?	1 stage liquid fuel rocket	Pre-programmed guidance, radar homing (passive or active)	300	3+	Nuclear 350 kt or 2 200 lbs HE	Operational 1965. Used by Blinder and Backfire aircraft.
	ASM	Kelt	AS-5	28	—	1 stage liquid fuel rocket	Active or passive radar homing	125	1·2	2 200 lbs HE	Operational 1966. Used by Badger C and G aircraft.
	ASM	Kingfish	AS-6	33	11 000	1 stage solid fuel rocket	Inertial mid-course active/ passive radar homing	300	3	Nuclear 200 kt or 2 200 lbs HE	Operational 1970-71. Used by Badger C aircraft.
	ASM	Kerry	AS-7	11·5	2 640	1 stage solid fuel rocket	Radio command	6	0·6	220 lbs HE	Used by Forger and Fitter aircraft.
	A/S	—	SUW-N-1	—	—	—	Ballistic unguided	16	—	Nuclear	Operational 1968. In "Moskva" and "Kiev" classes. Similar to USN ASROC.
	A/S	—	SSN-14	24·9	—	Solid fuel rocket	Radio command	30	0·9	Homing torpedo or nuclear	Operational 1968. Now in "Kirov", "Kresta II", "Kara" and "Krivak" classes. Probably has an anti-surface ship capability (originally SS-N-10).
	A/S	—	SSN-15	—	—	—	—	25	—	Nuclear	Operational 1974 for use from "Victor II", "Charlie II" and "Tango" class submarines in A/S operations.
UNITED KINGDOM											
	SLBM	Polaris A3 (see USA)	—	—	—	—	—	—	—	UK made 3×200 KT Thermo-nuclear MRV	Carried in "Resolution" class.
British Aerospace Dynamics Group	SAM/ SSM	Sea Dart	CF 299	14·3	1 212	Solid fuel booster Liquid ramjet sustainer	Radar guidance (Type 909) semi-active radar homing	40	—	HE	Fitted in *Bristol*, Type 42 destroyers with GWS 30 system and "Invincible" class for ships down to 300 tons.
British Aerospace Dynamics Group	SAM/ SSM	Light weight Sea Dart									
British Aerospace Dynamics Group	SAM	Sea Slug Mk 1 and 2	—	20·1	About 4 400	4 solid fuel boosters, solid fuel sustainer	Beam-riding (Type 901)	24(Mk 1) approx	2+	HE Proximity fuse	Surface-to-surface capability. Mk 2 has a longer range and better low-level capability.
British Aerospace Dynamics Group	SAM	Sea Wolf	PX 430	6·5	176	Solid fuel rocket	Radio command with TV or radar tracking (Type 910)	3+	2+	HE	Entire system GWS 25. (Normally to be used from 6-barrelled launcher). Lightweight version for ships smaller than frigates Sea Wolf VM 40 — under study.
Short Bros and Harland	SAM	Seacat	—	4·9	138	2 stage solid fuel rocket	Optical, Radar or TV	3·2	—	HE	Fitted in many systems GWS 20 (visual) GWS 22 and 24 (Radar). M4/1 (Radar), Signaal M40. Normally 4-barrelled launcher. 3-barrelled launcher (less than half the weight) in service. Latest version with sea-skimming anti-ship capability.
Short Bros and Harland	SAM	Slam (Blow Pipe)	—	4·4	24·5	2 stage solid fuel rocket	Optical with radio guidance	—	—	4·8 lb HE	Privately developed system. Suitable for submarines or surface ships.
British Aerospace Dynamics Group	ASM	Sea Eagle	P3T	—	—	Gas turbine	Radar/radio control radar homing				To be carried in Buccaneer, Tornado and Sea Harrier aircraft.
British Aerospace Dynamics Group	ASM	Sea Skua	CL 834	8·2	319	Solid fuel rocket	Radar/radio control radar homing	?5	—	45 lb HE	Developed for use from helicopters with Sea Spray radar.

Country/ Manufacturer	Classification	Name	No.	Length ft	Launch weight lb	Power plant	Guidance	Max range n. mile	Mach speed	Warhead	Remarks
UNITED STATES OF AMERICA											
Lockheed	SLBM	Polaris A3	UGM 27C	32	30 000(3)	2 stage solid fuel rocket	Inertial	2 500	10 at burn-out	Thermonuclear MRV head	See USA and UK sections for fitting policy.
	SLBM	Poseidon (C-3)	UGM 73A	34	65 000	2 stage solid fuel rocket	Inertial	2 500	—	Thermonuclear MIRV head	As above. Double A3 payload.
	SLBM	Trident I (C-4)	UGM 96A	34·1	70 000	3 stage solid fuel rocket	Inertial	4 000 approx	—	Thermonuclear MIRV and MARV head	To replace Poseidon using same tubes.
	SLBM	Trident II (D-5)	UGM	45·8	126 000	3 stage solid fuel rocket	Inertial	6 000 approx	—	Thermonuclear	For fitting in "Ohio" class SSBNs.
GDC-Convair	SLCM	Tomahawk	BGM 109	20·5	2 400-2 700	Solid boost-turbofan cruise	TAINS (Strat) Inertial with radar homing (Tact)	1 750 (Strat) 275 (Tact)	475 knots	HE (Tact) Nuclear (Strat)	Under development in both strategic and tactical forms in parallel with ALCM.
McDonnell Douglas	SSM/ USM	Harpoon	RGM 84	15 21 (s/m)	1 470 2 355 (s/m)	Solid fuel booster Turbojet sustainer	Pre-programmed Active radar homing	50 60 (s/m)	0·9	HE 500 lb	For general surface-ship fitting. Submarine version due in service 1981.
	ASM	Harpoon	AGM 84	12·6	1 168	As RGM 84	As RGM 84	120	0·9	HE	
	ASM	Condor	AGM 53	5·5	2 130	1 solid fuel rocket	Radio control TV homing	40-60	1·1	HE or nuclear	For carrier-borne A/C particularly A6. Production planned.
Maxson	ASM	Bullpup A and B	AGM 12B and C	10(A) 13·5(B)	571(A) 1 785(B)	1 liquid fuel rocket	Command	7(A) 10(B)	2	HE 250 lb(A) 1 000 lb(B) or nuclear	Operational 1959.
Texas Instruments Inc	ASM	Harm	AGM 88	13·7	780	1 liquid fuel rocket	—	—	—	—	High-speed anti-radiation missile development.
	ASM	Bulldog	AGM 83	9·8	600	1 liquid fuel rocket	Command	35	—	—	Modified Bullpup.
NASC/NWC	ASM	Shrike	AGM 45	10	390	1 solid fuel rocket	Passive radar homing	8-10	2	HE	Production 1963. Anti-radiation.
Martin, Marietta	ASM	Walleye I and II	AGM 62	11·2 (I) 13·2 (II)	1 100 (I) 2 400 (II)	Nil	TV guided	16 (I) 35 (II)	—	HE or nuclear	Glide bombs.
GDC-Pomona	ASM	Standard ARM	AGM 78	15	1 356	Dual thrust solid fuel rocket	Passive Radar homing	35	2	HE	Production 1968.
GDC-Pomona	SAM	Standard-MR (SM-1)	RIM 66	14·4	1 300	Dual thrust solid fuel rocket	Semi-active radar homing	10+	—	HE	Tartar replacement.
GDC-Pomona	SAM	Standard (SM-2)	RIM 66D					10+			Mid-course guidance for long-range. Talos replacement. Standard-MR (SM-2) with 20+ range for Aegis.

RADAR

Primary designator Range	Alternate designators	Manufacturer	Function	Transmitter frequency	Transmitter peak power
DENMARK					
20T48 Super	Pilot	TERMA	Navigation	I band	20 kW
FRANCE					
Calypso II	TRS 1030, TRS 1031	Thomson CSF	Surface search	I band	70 kW
Calypso III	TRS 3100	Thomson CSF	Surface search	I band	70 kW
Calypso IV	TRS 3110	Thomson CSF	Surface search	I band	25 kW
Castor I	TRS 3200	Thomson CSF	Fire control	I band	120 kW
Castor II	TRS 3200 and 3203	Thomson CSF	Fire control	I band	36 kW
DRBC 31	—	Thomson CSF	Fire control	I band	—
DRBC 32	—	Thomson CSF	Fire control	I band	—
DRBI 10	—	Thomson CSF	Height finder	E/F bands	Between 1 and 2 MW
DRBI 23	—	Thomson CSF	3 D Search	C/D bands	—
DRBN 30	—	Thomson CSF	Navigation	I band	7 kW
DRBN 31	—	Thomson CSF	Navigation	I band	—
DRBN 32	—	Thomson CSF	Navigation	I band	—
DRBR 50	—	Thomson CSF	Fire control	G/I bands	—
DRBR 51	—	Thomson CSF	Fire control	G/I bands	—
DRBV 13	—	Thomson CSF	Air/surface search	D-E/F bands	—
DRBV 20	—	Thomson CSF	Air search	C band	—
DRBV 22	—	Thomson CSF	Air search	D band	—
DRBV 23	—	Thomson CSF	Air search	D band	—
DRBV 26	—	Thomson CSF	Air search	D band	—
DRBV 31	—	Thomson CSF	Surface search	I band	—
DRBV 50	—	Thomson CSF	Air/surface search	G band	—
DRBV 51	—	Thomson CSF	Air/surface search	G band	—
DRUA 31	—	Thomson CSF	Surface search	I band	—
Jupiter I	THD 1077	Thomson CSF	Air search	D band	2 MW
Jupiter II	TRS 3010	Thomson CSF	Air search	D band	2 MW
Pollux	TRS 3220	Thomson CSF	Fire control	I band	200 kW
Pollux II	—	Thomson CSF	Fire control	Probably I band	—
Ramses	THD 1022	Thomson CSF	Navigation	I band	36 kW
Saturne I	THD 1041	Thomson CSF	Air search	E/F bands	1 MW
Saturne II	TRS 3043	Thomson CSF	Air search	E/F bands	1 MW
Sea Tiger	TRS 3001	Thomson CSF	Air/surface search	E/F bands	60 kW
Triton	TRS 3030, THD 1040	Thomson CSF	Surface search	G band	250 kW
Triton II	TRS 3035	Thomson CSF	Air/surface search	G band	250 kW
Triton S	TRS 3033	Thomson CSF	Air/surface search	E/F bands	10 kW
—	TRS 3250	Thomson CSF	Fire control	Ka band	35 kW
GERMANY (FEDERAL REPUBLIC)					
Atlas 1555	—	Krupp Atlas Elektronic	Navigation	—	—
INTERNATIONAL					
EX 77 Mod O	—	NATO Consortium	Fire control	Probably I Band	—

Country/ Manufacturer	Classification	Name	No.	Length ft	Launch weight lb	Power plant	Guidance	Max range n. mile	Mach speed	Warhead	Remarks
USA											
GDC-Pomona	SAM	Standard-ER (SM-1)	RIM 67A	26·2	2 900	2 stage solid fuel rocket	Semi-active radar homing	30+	—	HE	Standard-ER (SM-2) (RIM 67B) under development SSM capability. Terrier replacement (ER).
Raytheon	SAM	Seasparrow	RIM 7H	12	500	1 solid fuel rocket	Semi-active radar homing	12(E) 24+(F)	—	HE	XJ 521. Mk 25 or 29 (NATO) launcher. BPDMS
Bendix	SAM	Talos	RIM 8F, G, H and J	31·3 (booster)	7 000	Solid fuel booster ramjet sustainer	Beam rider semi-active radar homing	65+	2·5	HE or nuclear	SSM capability. RIM 8H has anti-radiation housing. Replacement by RIM 66D.
GDC-Pomona	SAM	Tartar	RIM 24B	15	1 425	Dual thrust solid fuel rocket	Semi-active radar homing	14	2	HE	Ceiling 40 000 ft Replacement by RIM 66.
GDC-Pomona	SAM	Terrier	RIM 2F	26·1 (booster)	3 000	2 stage solid fuel rocket	Semi-active radar homing	20+	2·5	HE	Ceiling 65 000 ft. Operational 1963. Replacement by RIM 67.
NWC-Hughes	AAM	Agile	AIM 95	8	250	Solid fuel	Infra-red	2	—	HE	Planned replacement for Sidewinder.
Hughes	AAM	Phoenix	AIM 54 A and C	13	985	1 solid fuel rocket	Radar homing	60+	2+	HE	In use in F14A Operational 1973.
Raytheon/NWC/ Philco Ford	AAM	Sidewinder-1B	AIM 9G, J, H, L M and P	9·5	185	1 solid fuel rocket	Infra-red	8	2	HE	Ceiling 50 000 ft+. First AIM9B entered service 1962.
Raytheon	AAM	Sparrow III	AIM 7E, F and M	12	450(E) 500(F and M)	1 solid fuel rocket	Semi-active radar homing	12(E) 25(F and M)	3·5	HE	For carrier-borne aircraft.
Honeywell	A/S	ASROC	RUR 5	15·4	1 000(Mk 44) 570(Mk 46)	1 solid fuel rocket	Pre-programme	1—6	—	Mk 44 or 46 torpedo or Nuclear D/C	Fired from multi-barrelled launcher. Mk 26 in later ships. 10 mile version under development.
Goodyear	A/S or anti-surface-ship	SUBROC	UUM 44	21	4 000	2 stage solid fuel rocket	Pre-programme inertial	25-30	1+	Nuclear	Fired from 21-in torpedo tubes.

PRF	Range	Remarks
Short NOM 400 Hz ± 200 Hz Long NOM 2000 Hz ± 200 Hz	48 n. miles	
Variable	30 km for 10 m² air target	In submarines
Variable	35 km for 10 m² air target	In submarines; an improved Calypso II
Variable	—	In submarines
Variable	—	Used with Vega fire control systems in medium size ships
Variable	15 km for a 0·1 m² air target	Used with Vega fire control systems in minor combatants
—	30 km for a 2 m² air target	
—	—	A, B and D versions in use throughout French Navy primarily for 57 and 100 mm guns
—	—	A to E versions
—	140 n. miles	Mounted in French carriers and *Jeanne d'Arc*. Robinson scanner
—	—	Mounted in "Suffren" class. Stacked beam
—	—	Obsolescent
—	Est. 12-15 n. miles	Mounted in minor combatants and minor craft. Obsolescent.
—	—	Introduced into French fleet in 1969. Obsolescent.
—	—	Associated with Masurca missile
—	—	Improved version of DRBR 50; associated with Masurca missile
—	—	A, B and C versions; C model in aircraft carriers
—	—	Multi-mode operation
—	—	A, B and D versions
—	—	B and C versions; C model transistorised in aircraft carriers
—	—	Mounted in type "F67" frigates
—	—	In Tartar equipped "T47" type destroyers and some frigates. Obsolescent.
—	—	In numerous French ships
—	—	A and B versions; mounted in "C70", "F67", "A69" types plus *Duperré*
—	—	In submarines
450 Hz	180 km for 2 m² air target	For ships over 2 000 tons
450 Hz	180 km for 2 m² air target	For ships over 2 000 tons
Variable	30 km for 2 m² air target	Associated with Vega fire control system
—	—	Improved Pollux; associated with Vega fire control system
—	—	Obsolescent
—	110 km for 2 m² air target	Obsolescent
—	110 km for 2 m² air target	Obsolescent
—	110 km for 2 m² air target	Associated with Vega fire control system
Continuous, variable over a wide range	33 km for 2 m² air target	Associated with Vega fire control system
Adjustable 1 000-2 000 Hz or 333-666 Hz MTI; staggered frequencies around 1 820 Hz	40 km for 2 m² air target (with slotted army antenna)	Associated with Vega fire control system
Variable	30 km for 2 m² air target	Associated with Vega fire control system
8 000 Hz	10 km for 2 m² air target	—
—	—	—
—	—	Director for NATO Sea Sparrow point defence missile system

Primary designator Range	*Alternate designators*	*Manufacturer*	*Function*	*Transmitter frequency*	*Transmitter peak power*
ITALY					
Argus 5000	—	Selenia	Air search	—	—
MLA 1	—	Selenia	Air search	—	—
MLN 1	—	Selenia	Navigation	—	—
MM/BPS 704	MM/SPN 703	Selenia	Navigation	—	—
MM/SPQ 2	—	SMA	Surface search	I band	—
Orion 250	—	Selenia	Fire control	I band	200 kW
Orion RTN 10X	—	Selenia	Fire control	I/J bands	—
Orion RTN 16X	—	Selenia	Fire control	I band	—
Orion RTN 20X	—	Selenia	Fire control	I band	—
Orion RTN 30X	—	Selenia	Fire control	I band	—
RAN 2C	—	Selenia	Air search	G band	—
RAN 3L	—	Selenia	Air search	D band	—
RAN 57	—	Selenia	Surface search	—	—
RAN 10S	—	Selenia	Air search	E/J bands	—
RAN 11L/X	—	Selenia	Air search	C/D bands	28 kW C band. 80 kW D band
RAN 13X	—	Selenia	Surface search	I band	—
RAN 14X	—	Selenia	Surface search	I band	—
RTN 20	—	—	Fire control	I/J bands	—
RTN 30X	—	—	Fire control	I/J bands	—
SPQ 2D	—	SMA	Surface search	I/J bands	—
3RM NAVRADAR	—	SMA	Navigation	I/J bands	—
JAPAN					
OPS 1	—	—	Air search	D band	—
OPS 2	—	—	Air search	D band	—
OPS 11	—	—	Air search	Est. F/G bands	—
OPS 12	—	—	Air search	—	—
OPS 14	—	—	Air search	—	—
OPS 15	—	—	Surface search	—	—
OPS 16	—	—	Surface search	—	—
OPS 17	—	—	Surface search	—	—
OPS 28	—	—	Not available	—	—
OPS 35	—	—	Surface search	G/H bands	—
OPS 37	—	—	Surface search	—	—
ZPS 2	—	—	Surface search	—	—
ZPS 3	—	—	Surface search	—	—
?	—	—	Fire control	—	—
Type 0	—	—	Fire control	Est. I/J bands	—
Type 1	—	—	Fire control	Est. I/J bands	—
Type 2	—	—	Fire control	Est. I/J bands	—
?	—	—	Meterological	—	—
NETHERLANDS					
DA 01	SGR 105	Hollandse Signaalapparaten	Target indication	E/F bands	—
DA 02	SGR 105	Hollandse Signaalapparaten	Target indication	E/F bands	—
DA 04	SGR 105	Hollandse Signaalapparaten	Target indication	E/F bands	—
DA 05	—	Hollandse Signaalapparaten	Air/surface search	E/F bands	—
DA 08	—	Hollandse Signaalapparaten	Air search and target indication	F band	—
Gemini	—	Hollandse Signaalapparaten	Fire control	X/K bands	—
LW 01	SGR 114/06	Hollandse Signaalapparaten	Air search	D band	—
LW 02	SGR 114/12	Hollandse Signaalapparaten	Air search	D band	—
LW 03	—	Hollandse Signaalapparaten	Air search	D band	—
LW 04	—	Hollandse Signaalapparaten	Air search	D band	—
LW 08	—	Hollandse Signaalapparaten	Air search	D band	—
M 1	SGR 101	Hollandse Signaalapparaten	Fire control	I/J bands	—
M 2	SGR 107	Hollandse Signaalapparaten	Fire control	I/J bands	—
M 4	SGR 108	Hollandse Signaalapparaten	Fire control	I/J bands	—
VI 01	SGR 104	Hollandse Signaalapparaten	Height finder	E/F bands	400 kW
WM 20 series	—	Hollandse Signaalapparaten	Search and fire control	I/J bands	—
SGE 30	—	Hollandse Signaalapparaten	Fire control	X/Ka bands	—
Sherpa	—	Hollandse Signaalapparaten	Heightfinder	F band	—
Starocks	—	Hollandse Signaalapparaten	Fire control	I/K bands	—
STIR	—	Hollandse Signaalapparaten	Fire control	I/J bands	—
ZW 01	SGR 103	Hollandse Signaalapparaten	Surface search	I/J bands	200 kW
ZW 04	—	Hollandse Signaalapparaten	Surface search	I/J bands	—
ZW 06	—	Hollandse Signaalapparaten	Surface search	I/J bands	—
ZW 07	—	Hollandse Signaalapparaten	Surface search	I/J bands	—
ZW 08	—	Hollandse Signaalapparaten	Air search	I band	—
ZW 09	—	Hollandse Signaalapparaten	Air search	I band	—
ZW 10	—	Hollandse Signaalapparaten	Navigation	I band	60 kW
ZW 11	—	Hollandse Signaalapparaten	Navigation	I band	60 kW
3D-MTTR	—	Hollandse Signaalapparaten	3D multi-purpose	—	—
LIROD 8	—	Hollandse Signaalapparaten	Fire control	K (Ka) band	—
VM 40	—	Hollandse Signaalapparaten	Fire control	X/K bands	
SWEDEN					
9 GR 600	—	—	—	I band	200 kW
9 LV 200	—	—	Fire control	—	—
SUBFAR	—	—	Air search	—	—
SWITZERLAND					
Sea Hunter	—	Contraves	Surface search	—	180 kW
?	—	Contraves	Fire control	Est. I/J bands	—
Sea Guard	—	Contraves	Fire control for guns, SSM, SAM and missile defence	—	—
UNION OF SOVIET SOCIALIST REPUBLICS					
Ball End	—	—	Navigation	I band	—
Band Stand	—	—	Surface search	—	—
Bass Tilt	—	—	Fire control (G)	H band	—
Big Net	—	—	Air search	C band	—
Boat Sail	—	—	Air search	D/E bands	—
Cross Bird	—	—	Air search	?D/E bands	—
Cylinder Head	—	—	Fire control (G)	—	—
Don—Don 2—Don Kay	—	—	Navigation	I band	—
Drum Tilt	—	—	Fire control (G)	H/I bands	—
Egg Cup	—	—	Fire control (G)	E band	—
Eye Bowl	—	—	Fire control (M)	F band	—
Fan Song E	—	—	Fire control (M)	G band	—
Fish Bowl	—	—	Fire control (M)	—	—
Flat Spin	—	—	Air search	D/E bands	—
Front Door/Front Piece	—	—	Fire control (M)	—	—
Hair Net	—	—	Surface search	E band	—
Half Bow	—	—	Fire control (G)	I band	—
Hawk Screech	—	—	Fire control (G)	G band (poss. I)	—

PRF	Range	Remarks
—	—	—
—	—	—
—	—	—
—	—	For use in submarines
—	—	—
—	—	Used in NA9 system scan
—	40 n. miles	Used with Argo IOX system
—	—	—
—	—	Used in Dardo system
—	—	Used in Albatros system
—	—	—
—	—	—
—	—	—
—	40 n. miles	—
—	35 n. miles	—
—	—	Surface and low flying search
—	—	—
—	—	Associated with Dardo system
—	—	Associated with Albatros system
—	—	Also short-range air search
—	—	—
—	—	Similar in appearance and parameters to US SPS 6
—	—	—
—	—	—
—	—	Not yet operational
—	—	—
—	—	Similar in appearance and parameters to US SPS 5
—	—	—
—	—	—
—	—	Not yet operational
—	Est. 20 n. miles	Found in old patrol craft
—	Est. 20 n. miles	Found in old patrol craft
—	—	In submarines
—	—	In submarines
—	—	Associated with Swiss Contraves fire control system; only in DD *Harukaze* as a test platform; IOC 1957
—	—	Associated with Model 68 fire control system; IOC 1957 in *Harusame*
—	—	Associated with Model 72 fire control system. Type 1A is for 5-in *(127 mm)* guns and Type 1B is for 3-in *(76 mm)*
—	—	Fire control system for light guns and missiles. IOC 1975 in *Murakumo*
—	—	In ice breaker *Fuji*
—	Medium	In Colombian "Halland" class plus numerous Netherland and West German ships
—	Medium	—
—	Medium	—
—	Medium	—
—	Medium	—
—	Short	—
—	Long	Only in Argentinian *25 de Mayo* and Peruvian *Almirante Grau* and *Aguirre*
—	Long	Designed for destroyer-size ships; employed by numerous navies
—	Long	—
—	Long	—
—	Long	—
—	Short	Associated with fire control directors M1, M2, M3
—	Short	Associated with fire control director M3
—	Short	Associated with fire control director M4
500-1 000 pps	Long	Only in Argentinian *25 de Mayo* and Peruvian *Almirante Grau*
—	Short	Radar for most M20 series fire control
—	Very short	—
—	Medium	—
—	Medium	—
—	—	—
1 000-2 000 pps	—	—
—	—	—
—	—	—
—	—	Radar for submarines
—	Medium	—
—	Short	—
4 000 Hz	Short	Also used commercially
4 000 Hz	Short	—
—	Long	—
—	Very short	—
—	Short	—
2-3 000 Hz	—	—
Approx 2 000 Hz	—	—
Variable 250-3 000 pps	—	—
Variable	—	—
—	—	Experimental systems, IOC 1957 in Japanese *Harukaze*
—	—	—
—	—	Obsolescent
—	—	In "Nanuchka" and "Sarancha" classes
—	—	30 mm Gatling and sometimes 57 mm—in "Kiev", "Kirov", "Kara", "Kresta I and II", "Kashin", "Berezina", "Nanuchka III" and "Grisha III" classes
—	100 n. miles for 2 m² target	Used in "Kresta I" and some "Kashin" classes; open lattice elliptical paraboloid illuminated by horn feed mounted on solid boom.
—	—	Used in "Whiskey Canvas Bag" class radar—picket submarines; associated with Stop Light ELINT. Also used in some "T43" pickets
—	—	In some "Skory" class
—	—	Obsolete—in "Skory" (after guns) class
—	—	In general use
—	—	In "Modified Sverdlov", "Kanin", "SAM Kotlin", "Osa", "Shersen", "Stenka", "Turya", "Natya", "Yurka", "Senyavin" and "Polnochniy" classes. Acquisition and tracking
—	—	Mounted on turrets; used for splash spotting. Associated with 152 mm, 130 mm and 100 mm guns
—	—	In "Kirov", "Udaloy" and "Krivak" classes; SS-N-14 system guidance
—	? 100 nm on bomber	Associated with SA-N-2; used in *Dzerzhinski*
—	—	SS-N-9
—	—	In some "Kotlin" and "Riga" classes
—	—	SS-N-3A system in "Juliett" and "Echo II" classes
—	—	Obsolescent. In few of "Riga" class
—	—	Obsolescent. 37 mm, 85 mm in "Skory" class
—	—	45 mm and 76 mm in "Skory", "Kotlin", "Kildin", "Don", "SAM Kotlin", "Kanin", "Petya", "Mirka" and "Lama" classes. Successor to Owl Screech

Primary designator Range	Alternate designators	Manufacturer	Function	Transmitter frequency	Transmitter peak power
USSR					
Head Light A and B	—	—	Fire control (M)	F/G/H/D bands	—
Head Net A	—	—	Air search	E/F bands	—
Head Net B	—	—	Air search	E/F bands	—
Head Net C	—	—	3 D	Possibly E/F bands	—
High Sieve	—	—	Surface search	—	—
Kite Screech	—	—	Fire control (G)	—	—
Knife Rest A and B	—	—	Air search	A band	—
Low Sieve	—	—	Surface search	—	—
Muff Cob	—	—	Fire control (G)	H band	—
Neptun	—	—	Navigation	I band	—
Owl Screech	—	—	Fire control (G)	G band (poss. I)	—
Palm Frond	—	—	Navigation	—	—
Peel Group	—	—	Fire control (M)	I band	—
Plinth Net	—	—	Surface search	?F band	—
Pop Group	—	—	Fire control (M)	F/H/I bands	—
Post Lamp	—	—	Fire control	I band	—
Pot Drum	—	—	Surface search	I band	—
Pot Head	—	—	Surface search	I band	—
Round Top	—	—	Fire control	H band	—
Scoop Pair	—	—	Fire control (M)	E band	—
Skin Head	—	—	Surface search	I band	—
Slim Net	—	—	Surface search	E band	—
Snoop Plate	—	—	Surface search	—	—
Snoop Slab	—	—	Surface search	—	—
Snoop Tray	—	—	Surface search	—	—
Spin Trough	—	—	Navigation	I band	—
Square Tie	—	—	Surface search	I band	—
Strut Curve	—	—	Air search	E/F bands	—
Strut Pair	—	—	Air search	F band	—
Sun Visor A and B	—	—	Fire control (G)	H/I bands	—
Top Bow	—	—	Fire control (G)	—	—
Top Dome	—	—	Fire control (M)	—	—
Top Knot	—	—	Aircraft control	—	—
Top Sail	—	—	3 D	C band	—
Top Steer	—	—	Air surveillance	—	—
Top Trough	—	—	Air search	C band	—
Trap Door	—	—	Fire control (M)	—	—
UNITED KINGDOM					
TM or AC 1226 C	RM 1226	Racal/Decca	Navigation	I band	25 kW
TM or AC 1229 C	—	Racal/Decca	Navigation	I band	25 kW
TM or AC-S 1230 C	—	Racal/Decca	Navigation	E/F bands	30 kW
TM or AC 1626 C	—	Racal/Decca	Navigation	I band	25 kW
TM or AC 1629 C	—	Racal/Decca	Navigation	I band	25 kW
AC-S 1630 C	—	Racal/Decca	Navigation	E/F bands	30 kW
ARPA 1626 C	—	Racal/Decca	Navigation	I band	25 kW
ARPA 1629 C	—	Racal/Decca	Navigation	I band	25 kW
ARPA 1630 C	—	Racal/Decca	—	E/F bands	25 kW
AWS 1	—	Plessey	Surface search	—	—
AWS 2	—	Plessey	Surface search	E/F bands	—
AWS 4	RN Type 994	Plessey	Air/surface search	E/F bands	625 kW
AWS 4 B	—	Plessey	Air/surface search and target indication	E/F bands	550 kW
AWS 4 BH	—	Plessey	Air/surface search and target indication	E/F bands	550 kW
AWS 5 A	—	Plessey	Air/surface search, target indication	E/F bands	—
AWS 5 B	—	Plessey	Air/surface search, target indication	E/F bands	—
AWS 5 D	—	Plessey	Air/surface search, target indication	E/F bands	—
AWS 6	—	Plessey	Air/surface search, target indication	G band	—
Decca 12	RN Type 974	Decca	Navigation	I band	20 kW
Decca 45	—	Decca	Navigation	I band	—
Decca 202	—	Decca	Navigation	—	—
Decca 212	—	Decca	Navigation	—	—
Decca 303	—	Decca	Navigation	I band	—
Decca 416	—	Decca	Navigation	—	10 kW
Decca 909	—	Decca	Navigation	I band	—
Decca 1226	RM 1226	Decca	Navigation	I/J bands	25 kW
Decca 2400	—	Decca	Navigation	—	—
MRS 3/GWS 22	—	Sperry	Fire control	—	—
RN Type 268	—	Marconi	Surface search	—	—
RN Type 285	—	—	Fire control	—	—
RN Type 291	—	—	Air search	E band	—
RN Type 901	—	—	Fire control	Possibly G band	—
RN Type 904	—	—	Fire control	—	—
RN Type 909	—	—	Fire control	Possibly G band	—
RN Type 910	—	—	Fire control	I band	—
RN Type 912	—	—	Fire control	I band	—
RN Type 965	—	Marconi	Air search	—	—
RN Type 967	—	—	Air search	E/F bands	—
RN Type 968	—	Kelvin Hughes	Surface search	C/D bands	—
RN Type 974	Decca 12	Decca	Navigation	I band	—
RN Type 975	—	—	Surface search	I band	50 kW
RN Type 978	—	—	Navigation	I band	—
RN Type 992 Q	—	Marconi	Surface search	E/F bands	—
RN Type 993	—	—	Air search	—	—
RN Type 994	AWS 4	Plessey	Surface search	E/F bands	—
RN Type 1006	—	Kelvin Hughes	Navigation and helicopter control	I band	—
RN Type 1022	—	Marconi/Signaal	Air search	—	—
RN Type 1030 STIR	—	Marconi	Surface search	—	—
S 604 HN	—	Marconi	Surface search	I band	—
S 800	—	Marconi	Surface search	I band	200 kW
SNW 12	—	Marconi	Air search	—	—
14/9	—	Kelvin Hughes	Navigation	I band	60 kW
Dolphin	—	Plessey	Point defence target indication/surveillance	G band	—
060	—	Racal/Decca	Navigation	I band	3 kW
090	—	Racal/Decca	Navigation	I band	3 kW
125	—	Racal/Decca	Navigation	I band	10 kW
150	—	Racal/Decca	Navigation	I band	10 kW

PRF	Range	Remarks
—	—	SA-N-3 and SS-N-14 systems in "Kresta II", "Moskva" and "Kara" classes
—	—	—
—	—	Back to back installation of Head Net A. In "Desna" class only
—	—	Dual V beam; second scanner tilted 30 degrees from horizontal. In "Moskva", "Kresta I and II", "Krivak" and some "Kanin" and "SAM Kotlin" classes
—	—	In some "Sverdlov" and "Skory" classes
—	—	100 mm in "Kirov" and "Krivak II" classes
—	—	—
—	—	In some "Sverdlov" class
—	—	Similar to Drum Tilt—57 mm in "Moskva", "Ropucha", "Kresta I and II", "Grisha I and II", "Nanuchka I", "Poti" and "T58" classes and auxiliaries
—	—	In general use
—	—	76 mm in "Kiev", "Kresta I", "Kara", "Kynda", "Krivak", "Kashin", "Mod Kildin" and "Ivan Rogov" classes. Succeeded by Hawk Screech
—	—	In "Kirov" class
—	—	Widely used. Associated with SA-N-1
—	—	Obsolescent. In "Kynda" and "Kresta I" classes
—	—	SA-N-4—Can possibly direct small calibre guns—in "Mod Sverdlov", "Kara", "Krivak", "Ivan Rogov" classes
—	—	Obsolescent
—	—	Housed in 1·5 m radome. In "Pchela", "Stenka" and "Shershen" classes
—	—	Smaller version of Pot Drum; used in some minor combatants of Warsaw Pact
—	—	—
—	—	SS-N-3 system. In "Kynda", "Kresta I" and all Sepal armed surface ships
—	—	Obsolescent. Used in minor combatants
—	—	Obsolescent.
—	—	Used in submarines
—	—	Used in submarines
—	—	—
—	—	Used in "Osa" class
—	60 n.miles medium alt. aircraft/ 20 n.miles surface ships	"Petya", "Mirka", "Poti" and "Grisha" classes
—	—	In one mod "Kildin" class
—	—	100 mm and 130 mm. In "Kotlin", "Krupny", "Kanin" and "Sverdlov" classes
—	—	152 mm guns
—	—	SA-N-6 in "Kirov" class
—	—	"Kiev" class
—	—	In "Kiev", "Moskva", "Kara" and "Kresta II" classes
—	—	In "Kiev" class
—	—	In some "Sverdlov" class
—	—	SS-N-12 system "Kiev" class. Retractable mount

825-3 300 pps	48 n. miles	—
825-3 300 pps	48 n. miles	—
825-3 300 pps	48 n. miles	—
825-3 300 pps	48 n. miles	—
825-3 300 pps	48 n. miles	—
825-3 300 pps	48 n. miles	—
825-3 300 pps	96 n. miles	—
825-3 300 pps	96 n. miles	—
825-3 300 pps	96 n. miles	—
—	—	In numerous frigate size ships
400-1 000 pps	50 n. miles	In Argentinian, Brazilian, Nigerian, Portuguese navies
700-1 600 pps	60 n. miles	In corvettes and larger ships; stabilised and non-stabilised versions. In Argentinian, Norwegian and Omani navies
680-1 360 pps	45 n. miles	Lightweight version for FAC
2 300 pps	—	High rotation rate to detect sea-skimming missiles
—	80 n. miles for a 4 m² target	Advanced dual-beam radar. In Danish and Nigerian navies
—	50 n. miles	Lightweight version of AWS 5 A
—	80 n. miles	Single-beam variant of AWS 5 A
—	—	Advanced light-weight surveillance radar
500-1 000 pps	—	IOC 1951. Obsolete
—	—	IOC 1953 Obsolete
—	—	—
—	—	—
—	—	—
1 000 pps	—	In some modern French ships
—	—	—
—	60 n. miles	In some modern French ships
—	—	—
—	—	Control for MRS 3 guns and Seacat missiles GWS 22
—	—	Introduced during WW II, obsolete
—	—	Obsolete, still found in Egyptian and South American ships
—	—	Introduced during WW II, obsolete, found in some Egyptian ships
—	—	Guidance for Sea Slug missile
—	—	In *Hermes*
—	—	Guidance for Sea Dart
—	—	Guidance for Sea Wolf
—	—	—
—	—	In earlier Type 42 destroyers
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	Replacement for Type 993 using aerial AKD
144 or 800 pps	—	To replace Type 975, 970 and 1000 series. Aerial outfits AZJ2 or AZK2
—	—	In "Invincible" class and later Type 42 destroyers. Replacing Type 965
—	—	IOC est. 1985
—	—	—
—	—	Lightweight for fast patrol craft
—	—	—
1 100	—	IOC 1956. Obsolete
—	—	Surveillance element of Sea-Guard weapons system
1 500	24 n. miles	
1 500	36 n. miles	
750-1 500	48 n. miles	
750-1 500	48 n. miles	

Primary designator Range	Alternate designators	Manufacturer	Function	Transmitter frequency	Transmitter peak power
UNITED STATES OF AMERICA					
BPS 5	—	—	Surface search	I/J bands	—
BPS 9	—	—	Surface search	I/J bands	—
BPS 11	—	—	Surface search	I/J bands	—
BPS 14	—	—	Surface search	I/J bands	—
BPS 15	—	—	Surface search	I/J bands	—
SPG 48	—	—	Fire control	I/J bands	—
SPG 49	—	Sperry	Fire control	G/H bands	—
SPG 50	—	Western Electric	Fire control	I/J bands	—
SPG 51	—	Raytheon	Fire control	G/I bands	—
SPG 52	—	Lockheed	Fire control	K band	—
SPG 53	—	Western Electric	Fire control	I/J bands	—
SPG 55	—	Sperry	Fire control	Possibly G/H bands	Approx 50 kW
SPG 60	—	Lockheed	Fire control	Possibly I/J bands	—
SPG 62	—	Raytheon	Fire control	I/J bands	—
SPN 4	—	Raytheon	Navigation	I/J bands	15 kW
SPN 5	CR-101-A	RCA	Navigation	I/J bands	30 kW
SPN 6	—	—	Air search	E/F bands	650 kW
SPN 11	CR-103	RCA	Navigation	I/J bands	30 kW
SPN 13	—	—	Navigation	E/I bands	—
SPN 18	CR-104	RCA	Navigation	I/J bands	—
SPN 21	Pathfinder 1500	Raytheon	Navigation	I/J bands	—
SPN 22	CR-105	Radiomarine	Navigation	I/J bands	—
SPN 23	—	—	Navigation	I/J bands	—
SPN 41	—	—	Carrier aircraft approach	J band	—
SPN 42	—	—	Carrier aircraft approach	—	—
SPN 43	—	—	Carrier aircraft approach	E/F bands	—
SPQ 9	—	—	Fire control	—	—
SPS 2	—	—	Air search	D band	—
SPS 5	—	Raytheon	Surface search	G/H bands	—
SPS 6	—	Bendix	Air search	D band	—
SPS 8	—	General Electric	Height finder	E/F bands	—
SPS 10	—	Raytheon/Sylvania	Surface search	G/H bands	—
SPS 12	—	RCA	Air search	D band	500 kW
SPS 21	—	—	Surface search	G/H bands	10 kW
SPS 23	—	—	Air search	—	—
SPS 28	—	Westinghouse	Air search	P band	250 kW
SPS 29	—	Westinghouse	Air search	P band	—
SPS 30	—	General Electric	Height finder	E/F bands	—
SPS 32	—	Hughes	Air search	P band	—
SPS 33	—	Hughes	Tracking	E/F bands	—
SPS 35	Pathfinder 1500	Raytheon	Navigation	I/J bands	—
SPS 36	—	—	Navigation	Probably I/J bands	—
SPS 37	—	Westinghouse	Air search	P band	—
SPS 39	—	Hughes	3 D	E/F bands	—
SPS 40	—	Lockheed	Air search	—	—
SPS 43	—	Hughes/Westinghouse	Air search	P band	—
SPS 46	—	—	Navigation	I/J bands	—
SPS 48	—	ITT/Gilfillan	3 D	E/F bands	—
SPS 49	—	Raytheon	Air search	L band	—
SPS 51	—	—	Surface search	Probably I/J bands	—
SPS 52	—	Hughes	3 D	E/F bands	—
SPS 53	—	Sperry	Surface search	I/J bands	—
SPS 55	—	Westinghouse	Surface search	I/J bands	175 kW
SPS 58	—	Westinghouse	Air search	L band	—
SPS 65	—	—	Air search	—	—
SPS 67 (V)	—	Norden	Surface search	—	—
SPW 2	—	Sperry	Missile guidance	G/H bands	—
SPY 1	—	RCA	Multi-function	E/F bands	—
HR 76	—	RCA	Fire control	Possibly I/J bands	300 kW
Mk 13	—	—	Fire control	I/J bands	—
Mk 25	—	Western Electric	Fire control	I/J bands	—
Mk 26	—	RCA, GE	Fire control	—	—
Mk 28	—	—	Fire control	—	—
Mk 29	—	—	Fire control	I/J bands	—
Mk 34	—	Western Electric	Fire control	I/J bands	—
Mk 35	—	General Electric	Fire control	I/J bands	—
Mk 39	—	—	Fire control	I/J bands	—
Mk 91	—	—	Fire control	—	—
Mk 92/94	—	—	Fire control	—	—
Mk 115	—	—	Fire control	—	—
Raytheon 1402	—	Raytheon	Navigation	Probably I/J bands	—
Raytheon 1404	—	Raytheon	Navigation	Probably I/J bands	—
Raytheon 1500	Pathfinder 1500 (SPN 21)	Raytheon	Navigation	I/J bands	—
Raytheon 1650	—	Raytheon	Navigation	Probably I/J bands	—

SONAR

Country/Designation	Description	Manufacturer	Mounting
AUSTRALIA			
Mulloka	Sonar project for RAN	—	—
Barra	Project Barra is RAAF/RAN project to develop advanced sonobuoy and airborne detection system	Amalgamated Wireless	—
CANADA			
HS 1000	Lightweight search and attack sonar either hull mounted or towed	Canadian Westinghouse	—
SQS 505	Medium search/attack sonar	Canadian Westinghouse	—
SQS 507 (Helen)	Lightweight variable depth towed sonar	Canadian Westinghouse	—
FRANCE			
DUBV/23D	Active surface vessel search/attack sonar	CIT/ALCATEL	Bow mounted
DUBV 43B	Variable depth sonar	CIT/ALCATEL	Towed
DUUX 2A/B/C	Passive sonar. Submarine detection system	CIT/ALCATEL	—
DUBV 24C	Low frequency panoramic search/attack sonar	CIT/ALCATEL	—
DUUA 2A	Simultaneous search and attack sonar for modernised "Daphne" class S/M	CIT/ALCATEL	—
DUUA 2B	Passive detection 1·5 – 15 kHz	CIT/ALCATEL	Hull
HS-71/DUAV-4	Helicopter sonar	CIT/ALCATEL	—
TSM 2 400/DUBA 25	Surface vessel sonar (TARPON). Attack sonar	Thomson CSF	Hull or towed
Diodon (TSM 2314)	Submarine detection, target tracking and attack operations	Thomson CSF	Hull or towed
Piranha (TSM 2140)	Attack sonar	Thomson CSF	Hull
DUBM 41A	Side looking sonar	Thomson CSF	Towed
DUBM 21A IBIS	Mine counter measure sonar	Thomson CSF	Hull mounted
DUBM 40B	Active mine hunting sonar	Thomson CSF	Towed
DUUX 5	Passive range finder	Sintra/Cit-Alcatel	—
SS 12	Active surface vessel search/attack sonar	Sintra/Cit-Alcatel	Hull/VDS
SS 24	Active surface vessel search/attack sonar	Sintra/Cit-Alcatel	Hull/VDS
SS 48	Active surface vessel search/attack sonar	Sintra/Cit-Alcatel	Bow/VDS

PRF	Range	Remarks
—	10-15 n. miles	Submarine radar, IOC early 1950s
—	—	Submarine radar, IOC late 1950s
—	—	Submarine radar, SSBNs
—	—	Submarine radar
—	—	Submarine radar
—	—	Associated with Mk 69 fire control system
—	120 km	Guidance for Talos SAM
—	—	Associated with Mk 63 fire control system
—	—	Associated with Mk 73 fire control system, Tartar SAM
—	—	Associated with Mk 70 fire control system
—	—	Associated with Mk 68 fire control system
—	50 km	Guidance for Terrier SAM
—	50 km	Doppler search and tracking
—	—	AEGIS illuminator
—	50 n. miles	—
—	40 n. miles	—
—	—	In USS *Lexington* and LPHs
—	—	IOC early 1950s
—	—	—
—	—	—
—	—	IOC 1957, used in small craft
—	—	—
—	—	Used in small craft
—	—	—
—	—	—
—	—	—
—	—	In "Kidd" and "Ticonderoga" classes
—	—	—
—	20 n. miles	IOC 1951
—	—	Used throughout Third World navies
—	—	In *Minas Gerais* and *Dedaldo*
625-650	—	IOC 1949. Superseded by SPS 55.
—	—	—
—	12 n. miles	Found in Third World navies
—	—	Used by USCG
—	100 n. miles	Philippine Navy
—	—	—
—	—	—
—	—	In *Enterprise* and *Long Beach*
—	—	—
—	—	IOC 1957, used in small craft
—	—	Used in small craft
—	—	—
—	—	—
—	—	—
—	—	IOC 1961
—	—	Used in small craft
—	—	IOC 1962
—	—	In "FFG 7" class frigates
—	—	Used by USCG
—	—	C version to be fitted in "DDG 2" and "DDG 15" classes
—	—	Used by USCG
750-2 250 Hz	—	In "Spruance" and "FFG 7" classes
—	66 n. miles for 1 m² target	—
—	—	Uses same antenae as SPS 10 and 58
—	—	IOC mid-1980s, solid state
—	—	TALOS associated
—	—	AEGIS system
1 200-1 500 Hz	22 n. miles for 1 m² target	Associated with Honeywell H-930 FCS
—	—	Obsolescent, "Iowa" class and some cruisers
—	—	Associated with Mk 37 GFCS
—	—	Obsolescent
—	—	Obsolescent
—	—	Associated with Mk 57 GFCS
—	—	Associated with Mk 63 GFCS
—	—	Associated with Mk 56 GFCS
—	—	—
—	—	Associated with Mk 29 lightweight Sea Sparrow launcher
—	—	US adaptation of Netherlands' WM 20 series. Used in frigates and US Coast Guard cutters
—	—	Associated with Mk 25 heavyweight Sea Sparrow launcher. Being phased out
—	—	In Brazilian *Custodio de Mello*
—	—	—
—	—	Used in small craft
—	—	—

Frequency	Power	Ship Type	Remarks
—	—	—	
—	—	—	
—	—	—	
—	—	—	
—	—	—	
4 operating frequencies around 5 kHz, 2 of which are operational	96 kW (2 × 48 kW)	A/S escorts Types T47/T56 "Suffren" class frigates and type C67 and corvettes type C70 of French Navy	
—	—	A/S escorts T47 and T56 also C67 series and C70 series	
—	—	Submarines	
4 operating frequencies around 5 kHz, 2 of which are operational	48 kW (2 × 24 kW)	—	
8·4 kHz	30 kW	"Daphne" class S/M	
—	—	"Agosta" class S/M	
—	—	Helicopter	
—	—	"Aviso" type	
Selectable: 11, 12 or 13 kHz	—	ASW small or medium tonnage	
11, 12 or 13 kHz	10 kVA	Small ship	
8, 9 or 10 kHz	5 kVA	Small ship	
100 kHz mod ±10 kHz	2 kW	Mine hunters	
730 kHz	1 kW	Mine hunters	
—	—	Submarines	
Around 13 kHz	—	Small/medium ships	
11/5 kHz	—	Medium/large ships	
Around 5 kHz	—	Large ships	

Country/Designation	Description	Manufacturer	Mounting
GERMANY, FEDERAL REPUBLIC			
CSU 3	Passive/active/intercept/sonar for submarines	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull
PRS 3	Passive ranging sonar for submarines	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull
SIP 3	Sonar information processor for passive classification	Fried. Krupp GmBH Krupp Atlas-Elektronik	—
PSU 1-2	Passive submarine sonar	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull
DSQS 21B	Active panoramic A/S—sonar for surface ships	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull and towed
DSQS 21C	Active panoramic A/S—sonar for surface ships	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull and towed
ASO 4-2 MOD	Active sonar for small surface vessels	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull
DSQS 11A	Mine avoidance sonar	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull
DSQS 11H	Mine hunting sonar	Fried. Krupp GmBH Krupp Atlas-Elektronik	Hull
ITALY			
IP 64/MD 64	Submarine sonars	USEA	—
NETHERLANDS			
LWS 30	Passive sonar/intercept system. Omni-directional surveillance against surface or sub-surface targets	Hollandse Signaalapparaten BV	—
PSH 32	High performance search and attack sonar	Hollandse Signaalapparaten BV	Hull
UNITED KINGDOM			
PMS 26/27	Lightweight search/attack sonar	Plessey	Hull
Type 195/195M	Helicopter sonar	Plessey	Dunking type
Type 162M	Sideways looking sonar (classification)	Kelvin Hughes	Hull
Type 170B	Short range search and attack	—	Hull
Type 177	Medium range search, panoramic	—	Hull
Type 184M	Medium range panoramic search and attack	Graseby	Hull
Type 186	Submarine sonar	EMI	Hull
Type 187	Submarine attack sonar	EMI	Hull
Type 193	RN mine hunting system (Acoustic)	Plessey	Hull
Type 193M	Solid state improved version of type 193 mine hunting sonar	Plessey	Hull
Type 199	Variable depth towed sonar	EMI	Towed
Type 719	Submarine sonar	EMI	Hull
Type 2001	Active/passive, submarine	—	Hull
Type 2007	Long range passive, submarine	GEC	Hull
SADE	Sensitive Acoustic Detection Equipment. Intruder detection system	Plessey	—
2016	Advanced fleet escort sonar	Plessey	—
GI 738	Towed decoy	Graseby	Towed
GI 750	Solid state panoramic search and attack	Graseby	Hull/VDS
GI 768	Solid state panoramic search and attack	Graseby	Hull/VDS
GI 777 K and C	Solid state panoramic search and attack	Graseby	Hull/VDS
GI 780	Solid state passive	Graseby	Bow
Hydro search	High definition sector scan	Marconi	Hull
UNITED STATES OF AMERICA			
AQS 13	Helicopter sonar	Bendix	Dunking type
BQG 1/4	Submarine passive fire control sonars	Sperry/Raytheon	Hull
BQN 17	Submarine navigation sonar	Raytheon	—
BQQ 1	Search and fire control sonars	Raytheon	Hull
BQQ 2	Sonar for Subroc system	Raytheon	Hull
BQQ 5	Nuclear attack submarine sonar	Hughes/GE/IBM/Raytheon	Hull
BQR 2B	Submarine passive sonar	EDO	Hull
BQR 7	Passive sonar. Part of BQQ 2 system	EDO	Hull
BQR 15	Towed submarine sonar	Western Electric	Towed
BQR 19	Submarine sonar	Raytheon	Hull
BQR 21	Submarine passive detection and tracking set (DIMUS)	Honeywell	Hull
BQR 24	Multi-purpose passive submarine sonar	Raytheon	Hull
BQS 4	Adds active capability to BQR 2B	Raytheon/EDO/Honeywell	Hull
BQS 8	Under ice navigation sonar	EDO/Hazeltine	Hull
BQS 11, 12, 13	Submarine search sonar. Passive/active	Raytheon	Hull
SQA 10	Variable depth sonar	Litton	Towed
SQA 13	Variable depth sonar Hoist	EDO/Litton	Towed
SQA 19	Variable depth sonar	Litton	Towed
SQQ 14	Mine hunting and classification sonar	GE	Hull
SQQ 23	Sonar for A/S patrol ships (dual dome)	Sperry	Hull
SQQ 23B	Sonar for A/S patrol ships (single dome)	Sperry	Hull
SQR 14	Surface sonar	—	Hull
SQR 18	Passive towed array	EDO	Towed
SQS 4	Short range active sonar	Sangamo/GE	Hull
SQS 23	Long range active sonar	Sangamo	Hull
SQS 26	Bow mounted "Bottom Bounce" mode sonar to replace SQS 23	EDO/GE	Hull
SQS 29/32	Surface vessel active sonars. Numbers relate to differing frequencies	Sangamo	Hull
SQS 35	Variable depth towed sonar	EDO	Towed
SQS 36	Medium range hull sonar	EDO	Hull
SQS 38	Medium range hull sonar	EDO	Hull
SQS 56	Medium range sonar for USN FFG ships	Raytheon	Hull
UQS 2	Mine hunting sonar	GE	Hull
Model 610	Long range hull sonar	EDO	Hull
700 series	Medium range hull and variable depth versions	EDO	Hull and towed
780 Series	Computer-based medium and long range hull and VDS	EDO	Hull and towed
Model 900	Submarine mine avoidance	EDO	Hull
Model 910	Surface ship mine avoidance	EDO	Hull
1102/1105	Submarine active/passive medium range	EDO	Hull
DE 1160B	Surface ship medium range	Raytheon	Hull
DE 1164	Surface ship integrated variable depth and hull mounted sonar	Raytheon	Hull or towed
DE 1167	Surface ship light weight variable depth	Raytheon	Towed
Micro Puffs	Submarine sonar/passive	Sperry	Hull

Frequency	*Power*	*Ship Type*	*Remarks*
—	—	Submarines	
—	—	Submarines	
—	—	Submarines	
—	—	Small submarines	
—	—	Destroyers, frigates	
—	—	Frigates, corvettes	
—	—	Small/medium ships	
—	—	Mine sweepers	
—	—	Mine hunters	
—	—	Small or medium size S/M	
—	—	—	
—	—	Corvette to frigate size ships	
10 kHz	13 kW	Ships and patrol craft over 150 tons—PMS 27 = PMS 26 with different hull outfit	
—	—	Westland Sea King ASW	
50 kHz	—	—	
—	—	Frigates with Mk 10 mortar	
—	—	Older frigates	
—	—	Destroyers and frigates	
—	—	Submarines	
—	—	Patrol Submarines	
—	—	Vosper mine hunter	
—	—	Mine hunters	
—	—	Frigates ("Leander" and "Tribal" classes)	
—	—	—	
—	—	Bow array	
—	—	Beam array	
—	—	"Invincible" class and Type 22	
—	—	Shore based	
—	—	Corvettes and above	
—	—	Frigates and above	
—	—	Corvettes	
—	—	Large patrol craft	
—	—	Small submarines	
—	—	Survey ships	
—	—	Helicopter	
—	—	S/M	
—	—	Development	
—	—	—	
—	—	S/M	
—	—	S/M	
—	—	S/M	
—	—	—	
—	—	SSBNs	
—	—	S/M	
—	—	SSBNs and SSNs	
—	—	S/M	
—	—	S/M	
—	—	S/M	
—	—	S/M	
—	—	—	
—	—	—	
—	—	—	
—	—	MCM	
—	—	—	Being modernised with Raytheon solid state transmitter
—	—	—	
—	—	ASROC armed ships	
—	—	US ASROC armed ships	
—	—	—	Re-designated SQS 53. Specified for 30 "Spruance" class DD 963 destroyers
—	—	—	
—	—	FRAM II and non-US "Fletcher" class	
—	—	"Knox" class	
—	—	—	SQS 36 introduced 1964
—	—	—	SQS 38 introduced 1971
—	—	Commercial DE-1160B and DE1164/1167 derivatives	
—	—	—	
—	—	—	
—	—	—	Used by US Navy, Australia, Brazil, Italy, Japan, Netherlands and Sweden
—	—	Frigates, corvettes and patrol craft	
—	—	—	
—	—	—	
—	—	Submarine	Passive model—1102
—	—	—	For Spanish and Italian Navies
—	—	—	For Italian Navy
—	—	—	For Spanish Navy
—	—	Fitted to Australian "Oberon" class	

TORPEDOES

No.	Name/Note	Length cm	Diameter mm	Weight kg	Speed knots	Range km	Explosive charge kg	Guidance	Target/Role	Carrier
FRANCE										
Z 16	Now probably obsolete	720	550	1 700	30	10	300	Preset plus Pattern	A/S	S/M
E 14	Acoustic Torpedo	429·1	550	900	25	5·5	200	Acoustic	A/Surface (up to 20 knots) + S/M at shallow depth	S/M
E 15	Acoustic Torpedo	600	550	1 350	25	12	300	Acoustic	A/Surface 0-20 knots + S/M at shallow depth	S/M
L 3	Acoustic Torpedo	430	550	910	25	5·5	200	Acoustic	A/S 0-20 knots up to 300 m depth	S/M only
L 4	Acoustic Torpedo	313 inc parachute stabiliser	533	540	30			Acoustic	A/S up to 20 knots	Airborne
L 5 Mod 1	Multi-purpose		533	1 000	35			Direct Attack or Programmed Search		Ship
L 5 Mod 3			533	1 300	35					S/M
L 5 Mod 4	Acoustic Torpedo	440	533	920	35	—	150	Acoustic	A/S	S/M/Surface
GERMANY, FEDERAL REPUBLIC										
SST 4	Wire Guided Torpedo	639 inc 46 wire casket	533				260	Wire Guided Active/ Passive Sonar Homing	A/Surface	Ship or S/M
	Sea Eel	639	533	1 370	35/23	13/28		Wire guided Active/ Passive Sonar Homing	A/S	S/M or FPBs
	Sut	613 and 670 inc wire casket	533							S/M or ship
	Seal	639 inc wire casket	533	1 370			260	Wire		Ships
	Seeschlange	400 inc wire casket	533				100	Wire	A/S	
ITALY										
G 6E	Kangaroo	620	533					Wire Guided	Obsolescent	
A 184		600	533					Wire Guided Active/Passive Sonar	A/S or A/Surface	Ship or S/M
A 244		270	324					Homing Course and Depth		Ship or aircraft
SWEDEN										
Type 42		244 + 18 wire section	400	290	25 (approx)	10/20	50 (approx)	Wire Guided and Homing in Course and depth	A/S and A/Surface	Ship S/M and helicopter
Type 61		70·25	533	1 765	45 (approx)	15/25	250	Wire Guided and Homing in Attack phase	A/Ship	Ship or S/M

No.	Name/Note	Length cm	Diameter mm	Weight kg	Speed knots	Range km	Explosive charge kg	Guidance	Target/Role	Carrier
UNION OF SOVIET SOCIALIST REPUBLICS										
—	—	—	533	—	—	—	—	—	—	Surface ships, submarines and aircraft
—	—	?500	406	—	—	—	—	—	—	
UNITED KINGDOM										
Mark 8		670	533	1 535	45	4·5		Preset Course Angle & Depth	A/Surface	S/M
Mark 20	—	411	533	821	20	11	91 kg HE	Pre-set/Homing	A/Surface, A/S	S/M
Mark 23	—	—	533	—	20	—	91 kg HE	Wire Guided Homing	A/S	S/M
Mark 24 Mod 0	Tigerfish	646·4	533	1 550	Dual high or low	32		Wire Guided Acoustic Homing	Primarily A/S	S/M
MW 30 Mark 44	Drill and Practice	256	324	233				Active/Acoustic Homing	A/Surface	Aircraft, ship, helicopter
—	Stingray	210	330	—	—	—	—	Active/Passive	A/S	Aircraft, ship, helicopter
UNITED STATES OF AMERICA										
Mark 14	Mod 5	525	533	1 780	32·46	6·8	230	Preset depth & Course Angles	A/Surface	S/M
Mark 37	Mod 3	340	484·5	649	24	8	150 HE	Free running then Sonar Auto Homing	A/S	S/M
Mark 37	Mod 2	409	484·5	766	24	8	150 HE	Wire Guidance Active/Passive Sonar Homing	A/S	S/M
NT 37C		409	484·5	—	34	—				S/M and surface ship
NT 37 2C Dimensions and warheads as for Mk 37 Mod 2/3 but speed increased by 40%, range by over 100% and wire guided capability in excess of 13 000 yds. Improvements to sonar and homing logic plus additional A/Ship attack modes									A/Surface, A/S	Ship or S/M
Mark 44	Mod 1	260	324	196·4		—	—	Active Acoustic	A/S	Ships (Mk 32 or Asroc), aircraft
Mark 45	Mod 1 Astor (Mod 2)	580	484·5	1 003·8		approx 11	Nuclear Warhead	Wire Guided	A/S	S/M being replaced by Mk 48
Mark 45F	Freedom Torpedo	572	484·5	1 237	40	18·5	minimum of 295 kg	Wire Guided to hit or free run to intercept followed by pattern run if target missed	A/Surface, A/S	Ship or S/M
Mark 46	Mod 0, 1 and 2	260	324	257 230 (1 and 2)		—	—	Active/Passive Acoustic Homing	A/S	Ships, (Mk 32 or Asroc), aircraft, helicopter Mod 1 and 2 have liquid propellant
Mark 46	Captor Mod 4	Mk 46 inserted in mine casing and sown in narrow seas. See Jane's Weapon System 2541.441.								
Mark 48	Mod 1 and 2	580	533	1 579	50	46	—	Wire Guided and Active/Passive Acoustic Homing	A/Surface, A/S	S/M

DEXTOR (Deep EXperimental TORpedo) Mk 48 replacement

ALWT (Advanced LightWeight Torpedo) Mk 46 replacement

INDEXES

COUNTRY ABBREVIATIONS

Alb	Albania
Alg	Algeria
Ana	Anguilla
Ang	Angola
Arg	Argentina
Aus	Austria
Aust	Australia
Ban	Bangladesh
Bar	Barbados
Bel	Belgium
Ben	Benin
Bhm	Bahamas
Bhr	Bahrain
Blz	Belize
Bmd	Bermuda
Bol	Bolivia
Bru	Brunei
Brz	Brazil
Bul	Bulgaria
Bur	Burma
Cam	Cameroon
Can	Canada
Chi	Chile
Col	Colombia
Com	Comoro Islands
Con	Congo
CPR	China, People's Republic
CpV	Cape Verde
CR	Costa Rica
Cub	Cuba
Cyp	Cyprus
Cz	Czechoslovakia
Den	Denmark
DPRK	Korea, Democratic People's Republic (North)
DR	Dominican Republic
Ecu	Ecuador
Egy	Egypt
EIS	El Salvador
EqG	Equatorial Guinea
Eth	Ethiopia
Fij	Fiji
Fin	Finland
Fra	France
Gab	Gabon
Gam	Gambia
GB	Guinea-Bissau
GDR	Germany, Democratic Republic
GFR	Germany, Federal Republic
Gha	Ghana
Gn	Guinea
Gra	Grenada
Gre	Greece
Gua	Guatemala
Guy	Guyana
Hai	Haiti
HK	Hong Kong
Hon	Honduras
Hun	Hungary
IC	Ivory Coast
Ice	Iceland
Ind	India
Indo	Indonesia
Iran	Iran
Iraq	Iraq
Ire	Ireland
Isr	Israel
Ita	Italy
Jam	Jamaica
Jap	Japan
Jor	Jordan
Kam	Kampuchea
Ken	Kenya
Kwt	Kuwait
Lao	Laos
Lbr	Liberia
Lby	Libya
Leb	Lebanon
Mad	Madagascar
Mex	Mexico
Mlt	Malta
Mlw	Malawi
Mly	Malaysia
Mnt	Montserrat
Mor	Morocco
Moz	Mozambique
Mrt	Mauritius
Mtn	Mauritania
Nic	Nicaragua
Nig	Nigeria
Nld	Netherlands
Nor	Norway
NZ	New Zealand
Omn	Oman
Pak	Pakistan
Pan	Panama
Par	Paraguay
Per	Peru
Plp	Philippines
PNG	Papua New Guinea
Pol	Poland
Por	Portugal
Qat	Qatar
RoC	Taiwan
RoK	Korea, Republic (South)
Rom	Romania
SA	South Africa
Sab	Sabah
SAr	Saudi Arabia
Sen	Senegal
Sey	Seychelles
Sin	Singapore
SL	Sierra Leone
Sol	Solomon Islands
Som	Somalia
Spn	Spain
Sri	Sri Lanka
StK	St Kitts
StL	St Lucia
StV	St Vincent and the Grenadines
Sud	Sudan
Sur	Suriname
Swe	Sweden
Syr	Syria
Tan	Tanzania
Tld	Thailand
Tog	Togo
Ton	Tonga
TT	Trinidad and Tobago
Tun	Tunisia
Tur	Turkey
UAE	United Arab Emirates
Uga	Uganda
UK	United Kingdom
Uru	Uruguay
USA	United States of America
USSR	Union of Soviet Socialist Republics
Ven	Venezuela
VI	Virgin Islands
Vtn	Viet-Nam
YAR	Yemen Arab Republic (North)
YPDR	Yemen, People's Democratic Republic (South)
Yug	Yugoslavia
Zai	Zaïre
Zam	Zambia
Zan	Zanzibar

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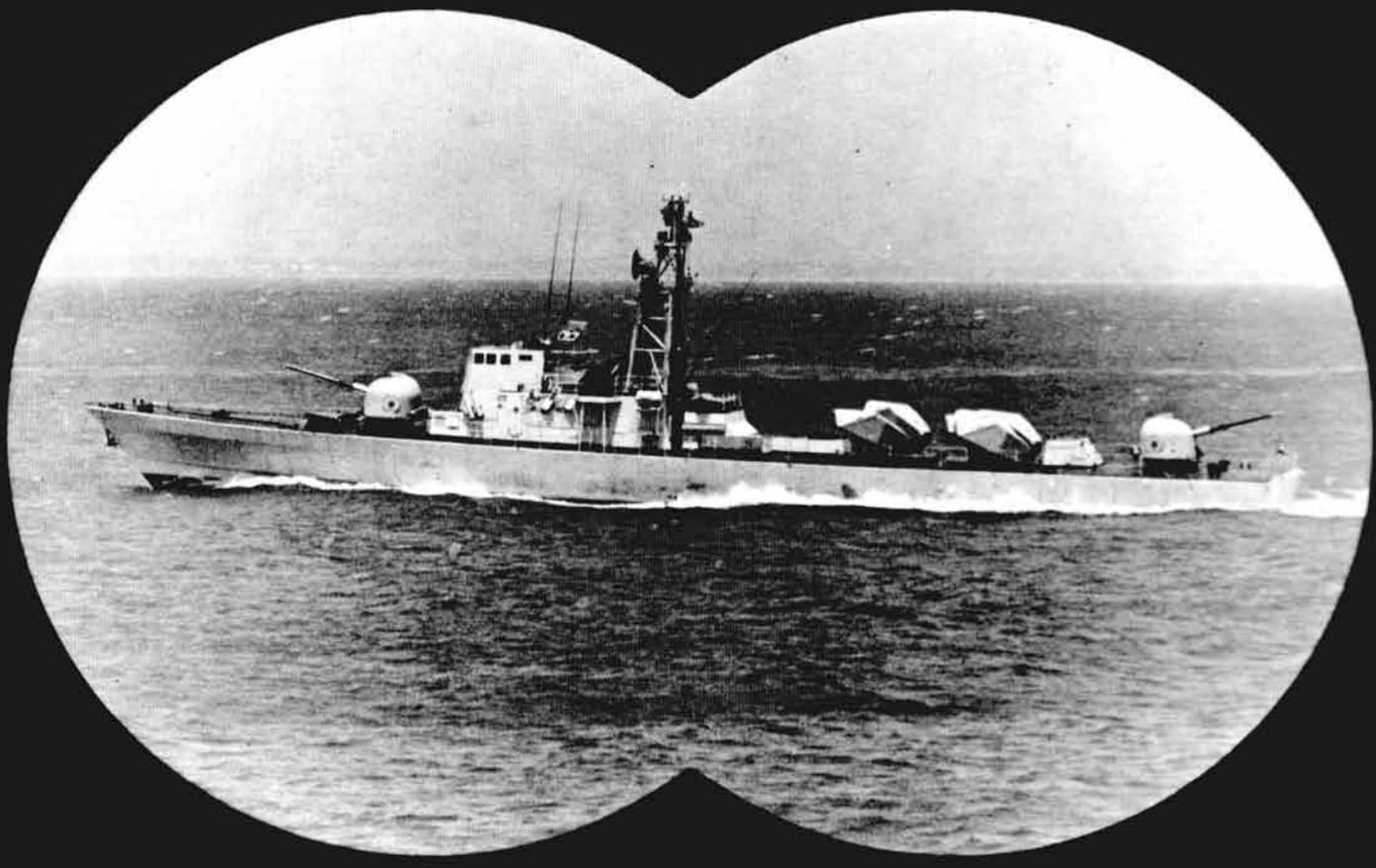

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